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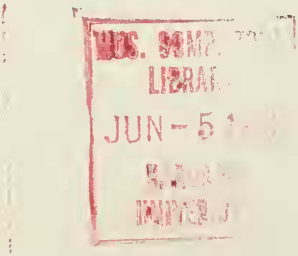

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CONTENTS

INTRODUCTION

From Tamaulipas, the northeasternmost state in the Mexican Republic, 146 kinds of mammals, belonging to 72 genera, are here reported. Mammals that are strictly marine in habit are not included. The state is crossed in its middle by the Tropic of Cancer. Elevations vary from sea level on the Golfo de México to more than 2700 meters in the Sierra Madre Oriental; most of the state is below 300 meters in elevation. Its area is 79,602 square kilometers (30,732 square miles).

Tamaulipas, meaning "lugar en que hay montes altos" (place of high mountains), was explored in 1516 by the Spaniard Francisco Fernández de Córdoba, but it was not until the 18th century that José de Escandón established several villages in the new province of Nueva Santender from which, in the time of Iturbide's Empire, Tamaulipas was separated as a distinct political entity, with about the same boundaries that it now has.

My first contact with the state of Tamaulipas, as a mammalogist, was in 1957, when in company with Dr. Bernardo Villa R. I visited the Cueva del Abra in the southern part of the state. On several

occasions since then I have been in the state, especially when employed by the Dirección General de Caza of the Mexican Government. In 1960-1962 I had the opportunity of studying the mammalian fauna of Tamaulipas at the Museum of Natural History of the University of Kansas. The approximately 2000 specimens there represent many critical localities, but are not sufficient to make this report as complete as could be desired. Consequently the following account should be considered as a contribution to the knowledge of the mammals of México and is offered in the hope that it will stimulate future studies of the Mexican fauna, especially that of the eastern region.

PHYSIOGRAPHY

Tamaulipas can be divided into three physiographic regions, which from east to west are Gulf Coastal Plain, Sierra Madre Oriental, and Central Plateau or Mexican Plateau (Fig. 1).

Gulf Coastal Plain

This physiographic region covers most of the state and extends northward into Texas and a short distance southward into Veracruz.

According to Tamayo (1949) and Vivo (1953), the Gulf Coastal Plain is formed by sedimentary rocks from Mesozoic to Pleistocene in age. The most common type of soil is Rendzin, especially in the coastal area. Elevations range from sea level to 300 meters. The area is in general a flat plain inclined to the sea but this plain is broken by several small sierras. The more important of these are the Sierra de Tamaulipas, which rises to more than 1000 meters, and the Sierra San Carlos, which has a maximum elevation of approximately 1670 meters. The Sierra de San José de las Rucias is smaller.

Sierra Madre Oriental

This physiographic region is represented in Tamaulipas by a small part of the long Sierra Madre Oriental that extends from the Big Bend area in Texas southward to the Trans-volcanic Belt of central México. The Sierra Madre Oriental is in the southwestern part of Tamaulipas. The Sierra was formed by folding of the Middle and Upper Cretaceous and Cenozoic deposits that now are 400 to 2700 meters in elevation. In general, the soils are Chernozems.

This physiographic region is situated between the other two physiographic regions in Tamaulipas and represents a barrier to the

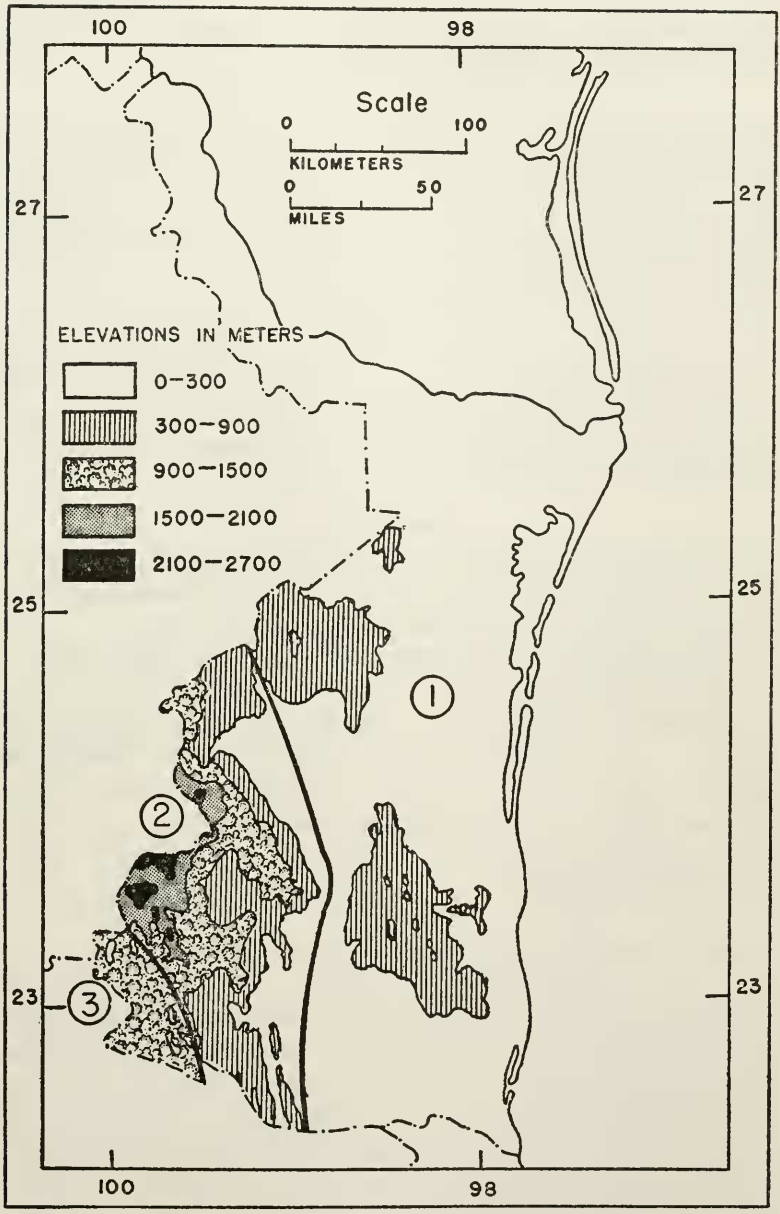

FIG. 1. Three physiographic regions: 1 Coastal Plain; 2 Sierra Madre Oriental; 3 Central Plateau.

distribution of some tropical mammals on the one hand and to those from the Mexican Plateau on the other.

Central Plateau

This physiographic region, commonly termed the Mexican Plateau, occupies only a small area of Tamaulipas in its southwesternmost part. The plateau is approximately 900 meters above sea level. In general, the Mexican Plateau was formed by Cretaceous sediments. The most common type of soil is Chestnut.

CLIMATE

Owing to the differences in elevations and varying distances from the sea, the climate of Tamaulipas is varied. Tamayo (1949), following the Koeppen System, assigned to Tamaulipas 10 different climate types that result principally from differences in temperature, precipitation, and humidity.

Temperature

The annual mean temperature for the lands less than 1000 meters in elevation, which make up most of the state, is between 20° and 25° C.; and the difference in monthly means is 5° C.

In the areas above 1000 meters, the annual mean is between 15° and 20° C., and the difference in the monthly means is 15° C.

The maximum temperature recorded in the state is 45° C. in the region of Ciudad Victoria, between the Sierra Madre Oriental, the Sierra San Carlos, and the Sierra de Tamaulipas. Minima recorded are between 0° and 5° C. on the southeastern coast, 0° to —5° C. between 98° 20′ long. and 99° 00′ long., and —5° to —10° C. in the Sierra Madre Oriental.

Precipitation

Rainfall varies seasonally and can be described as follows: In January it amounts to 25 to 50 mm. in the coastal region and 10 to 25 mm. in the rest of the state. In April there is more than 25 mm. to the north of about 23° north latitude, 10 to 25 mm. in the Sierra de Tamaulipas and Sierra Madre Oriental, and less than 10 mm. in the extreme southwestern part of the state.

In July rainfall amounts to less than 25 mm. in Nuevo Laredo and San Fernando, is from 25 to 50 mm. in the northeastern and central parts of the state, 50 to 100 mm. in the Sierra San Carlos and Sierra Madre Oriental, and 100 to 200 mm. in the area south of Soto la Marina and east of the Sierra Madre Oriental. In October rainfall

is less than 50 mm. in the northern half of the state, including the Sierra de Tamaulipas, and 50 to 100 mm. in the rest of the state, except on the east side of the Sierra Madre Oriental and in the area near Tampico, which receive between 100 and 200 mm.

The number of rainy days per year varies from 60 to 90 at Sierra San Carlos, Sierra Madre Oriental, and in the lowlands south of 23° north latitude; the rest of the state has about 60 rainy days, excepting the Mexican Plateau, which has fewer than 60.

Although Tamayo (1949) followed the Koeppen System in classifying types of climate and thereby recognized 10 different kinds of climate in Tamaulipas, these can be grouped into three major categories as follows:

Steppe Dry Climate (Clima Seco de Estepa)

This kind of climate can be divided into two categories based on the average annual temperature.

Warm

The average annual temperature exceeds 18° C. but the mean of the coolest month is less than 18° C. This sub-climate is characterized by a short rainy season in summer and occurs on the west side of the southern part of the Sierra Madre Oriental and on the Mexican Plateau; it occurs also in the area northwest of Reynosa and on the east side of the Sierra Madre Oriental but in these areas the rainfall is irregularly distributed in the year.

Cool

The average annual temperature is less than 18° C. but the mean of the warmest month exceeds 18° C. This sub-climate occurs only on the west side of the northern part of the Sierra Madre Oriental.

Moderate Rainy Temperature Climate
(Clima Templado Moderato Lluvioso)

This type of climate is characterized by the coolest month having a temperature of between — 3° and 18° C. In the northeastern and central parts of Tamaulipas, including the Sierra de Tamaulipas, Ciudad Victoria, Gómez Farías, Rancho Pano Ayuctle, and Llera, the average temperature of the warmest month is less than 22° C.; the winters are dry and not rigorous, and the wettest month has ten times as much rain as the driest. In the Sierra San Carlos the average temperature of the warmest month is less than 22° C., and the rainy season is in the autumn.

Tropical Rainy Climate (Clima Tropical Lluvioso)

This climate is characterized by the average temperature of all months being above 18° C. and the mean-annual rainfall being above 75 cm. According to the distribution of precipitation this type of climate can be divided into: (1) areas having periodic rain and wet winters (southeastern Tamaulipas, south of 22° north latitude and east of 99° west longitude), and (2) areas having an irregular rainy season and dry winters (area around Ciudad Mante, between 99° 30′ and 98° 30′ west longitude and south of 22° 30′ north latitude).

AFFINITIES OF TAMAULIPAN MAMMALS

Owing to the differences in climate from one region to another, the flora and fauna also differ, especially in the southern part of the state as compared with the northern part.

For expressing the taxonomic resemblance of mammalian faunas having nearly equal numbers of taxa, Burt (1959:139) recommended the following formula: $C \times 100/(N_1 + N_2 - C)$ (where C is the number of taxa common to the two faunas, N_1 is the number of taxa in the smaller fauna, and N_2 is the number of taxa in the larger fauna). For non-flying mammals the resemblance of the Tamaulipan fauna to that of Texas, adjacent to the north, and Veracruz, adjacent to the south, is as follows:

Genera.—Texas 65 per cent, Veracruz 60 per cent.

Species.—Texas 45 per cent, Veracruz 39 per cent.

For bats the resemblance of the Tamaulipan fauna to those of Texas and Veracruz is as follows:

Genera.—Texas 40 per cent, Veracruz 51 per cent.

Species.—Texas 24, Veracruz 39.

Table 1.—Number of Genera and Species of Non-introduced Land Mammals in Three States.

	Number of taxa				Number of taxa in common			
	genera		species		genera		species	
States	non-bats	bats	non-bats	bats	non-bats	bats	non-bats	bats
Texas	51	12	103	25	39	10	58	12
Tamaulipas	48	23	83	36	.....	.....	.....	.....
Veracruz	53	36	94	60	38	20	50	27

For all of the land mammals of Tamaulipas, the resemblance is as follows:
Genera.—Texas 58, Veracruz 57.
Species.—Texas 40, Veracruz 39.

On the whole, the fauna of Tamaulipas resembles faunas of both the Brazilian Subregion and the North American part of the Nearctic Subregion (see Hershkovitz, 1958:611). Considering the 48 genera of non-flying land mammals of Tamaulipas, 24 genera occur in habitats from the North American part through habitats of northern México into the Brazilian Subregion. Of the remaining 24 genera, 16 occur in the North American part of the Nearctic Subregion or in it and the part of northern México north of the Brazilian boundary, whereas eight occur in the Brazilian Subregion or in it and the northern part of México. None occurs only in Tamaulipas or only in northern México.

The non-flying fauna of the coastal plain east of the Sierra Madre Oriental and south of the Sierra de Tamaulipas and Soto la Marina is mainly tropical in affinities; only 27 per cent of that fauna (at the subspecific level) resembles the fauna north of Soto la Marina, which is Nearctic in its affinities. The fauna of the Sierra de Tamaulipas has a greater taxonomic resemblance (20.4 per cent at subspecific level) to that of the Sierra Madre Oriental, than does the fauna of the Sierra San Carlos (17.6 per cent). Taxonomic resemblance between the faunas from the Sierra San Carlos and the Sierra de Tamaulipas amounts to only 16.1 per cent. Therefore, the faunas of these two Sierras (both are included in the same zoogeographic unit) resemble each other less than either resembles the fauna of the Sierra Madre Oriental (in another zoogeographic unit). Of the three sierran faunas, those of the Sierra Madre Oriental and the Sierra de Tamaulipas have most in common. Migration from one to the other in relative recent time may account for the resemblance. The Sierra San Carlos may have been isolated for a long time and interchange between its fauna and those of the other two sierras, therefore, may have been slight.

Study of the taxonomic resemblance shows that the dividing line, in eastern México, between Nearctic and Neotropical faunas is along the eastern base of the Sierra Madre Oriental, the southern base of the Sierra de Tamaulipas and thence to the coast at or near Soto la Marina.

PLANT-MAMMAL RELATIONSHIPS

Merriam (1898) assigned to Tamaulipas four Life-zones. There were: Transitional on the highest elevations of the Sierra Madre;

Upper Austral at lower elevations on the Sierra Madre; Lower Austral over most of the state; and Tropical in the coastal areas.

Dice (1943) outlined Biotic Provinces on a map of North America and in the northern part of Tamaulipas showed two Biotic Provinces, Tamaulipan and Potosian. He did not show the southeastern limits of the Chihuahuan Biotic Province nor any of the limits of the Veracruzian Biotic Province and in text mentioned nothing about the limits of these two provinces with reference to Tamaulipas. Later, Goldman and Moore (1946) divided Tamaulipas in three Biotic Provinces: Tamaulipas, Sierra Madre, and Veracruz. Still later (1949), Smith published a map of Mexican Biotic Provinces based on the herpetofauna of the Republic. He divided Tamaulipas among four Provinces. Two were Nearctic (Austro-oriental and Tamaulipan) and the other two were Neotropical (Veracruzian and Cordoban).

Leopold (1950 and 1959) recognized five principal vegetational types in Tamaulipas as follows: Mesquite-grassland; Pine-oak Forest; Thorn Forest; Tropical Deciduous Forest; and Desert.

For dealing with the mammals of Tamaulipas in the following accounts the four Biotic Provinces (Tamaulipan, Potosian, Veracruzian, and Chihuahuan) of Dice are the most useful. For dealing with types of vegetation in the accounts that follow, Leopold's (1950) system is employed although reference is made to other associations and formations that have been reported in Tamaulipas.

Tamaulipan Biotic Province

This Province is recognized by most authors who have written about the zoogeography of México. It is the most extensive in the state and includes the northern part of the Coastal Plain (see Fig. 2).

The vegetation of the Tamaulipan Biotic Province is in general Mesquite-grassland but in the Sierra San Carlos and Sierra de Tamaulipas other types of vegetation are found.

Two formations occur in the Mesquite-grassland. The first is the Mesquite Scrub, in which the dominant plant is the mesquite (*Prosopis juliflora*), associated with *Cordia boissieri*, several species of *Acacia*, and in some areas with *Opuntia* and *Yucca treculeana*. The dominant grasses are of the genera *Bouteloua* and *Andropogon*. The second formation is the Gulf Bluestem Prairie, where species of *Andropogon* are the dominants on the well-drained sites.

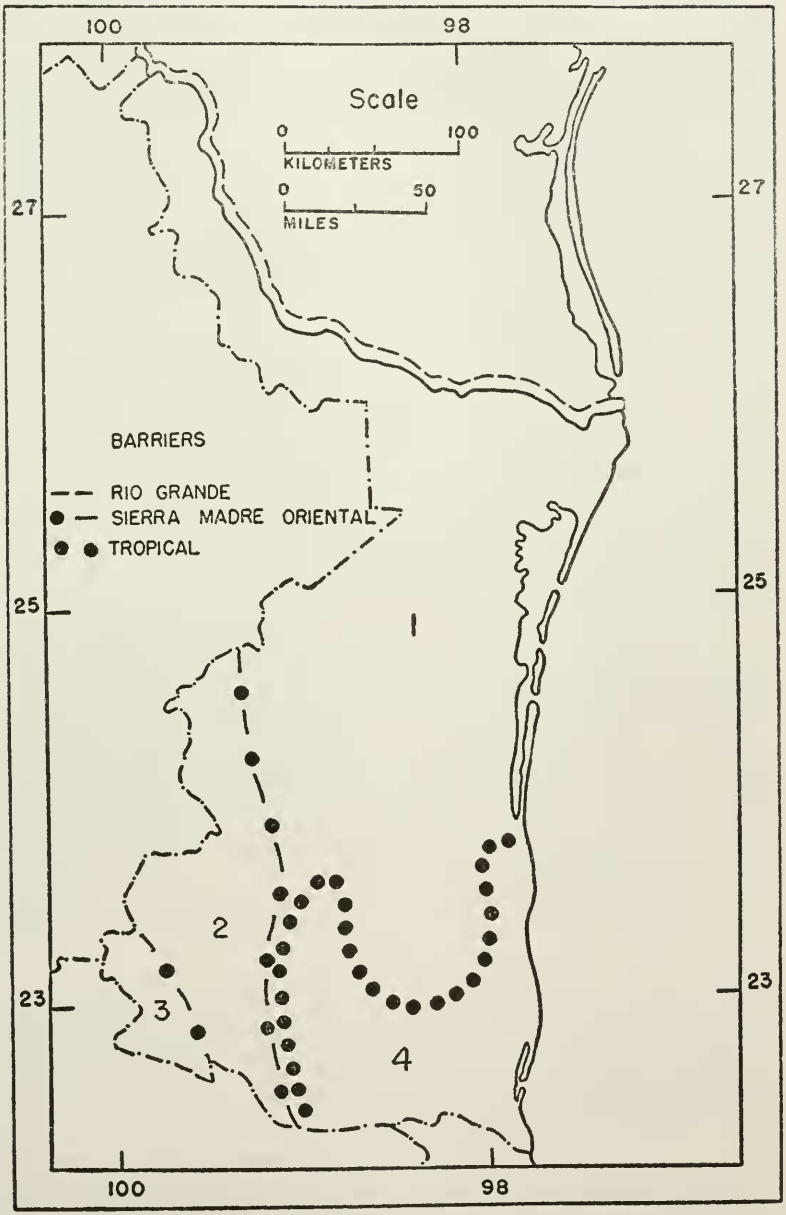

FIG. 2. Four biotic provinces: 1 Tamaulipan; 2 Potosian; 3 Chihuahuan; 4 Veracruzian.

Sloughs and depressions are occupied by cordgrass, *Spartina spartinae*. Many areas have been invaded by mesquite and other shrubs.

Around the Sierra de Tamaulipas and in the area between it and the Sierra San Carlos the vegetation is Thorn Forest (Tropical Thorn Forest of Martin *et al.*, 1954), in which the dominant plants are *Acacia, Ichthyomethia, Ipomea, Prosopis,* and *Cassia.* Another type of vegetation in the Sierra de Tamaulipas is the Tropical Deciduous Forest at 300 to 700 meters elevation, the trees of which are 20 meters high with a canopy averaging eight meters high (Martin *et al., op. cit.*). The common species of trees belong to the genera *Tabebuia, Ipomea, Bombax,* and *Conzattia.* Species of *Bursera, Acacia,* and *Cassia* are less abundant. In the low canyons *Bursera, Ceiba,* and *Psidium,* draped with lianas and various epiphytes, can be found.

The Pine-oak Formation grows above an elevation of 800 meters in the Sierra de Tamaulipas and is characterized by *Pinus cembroides, P. nelsonii, P. teocote,* and *Quercus arizonica.* Martin *et al.* (*op. cit.*) recorded Montane Scrub from the dry areas, between elevations of 600 and 900 meters. That scrub is formed by huisaches (*Acacia farnesiana*) along with a few oaks and some trees of the Tropical Deciduous Forest.

The vegetation of the Sierra San Carlos was studied by Dice (1937) and divided into three life belts, each with several associations. For more information about the plants of each association and their related mammals see the publication of the mentioned author.

Endemic mammals of the Tamaulipan Biotic Province, in the part of it that is in Tamaulipas, are the following: *Scalopus inflatus; Lepus californicus curti; Spermophilus spilosoma oricolus; Cratogeomys castanops tamaulipensis; Dipodomys ordii parvabullatus;* and *Sigmodon hispidus solus.* Other characteristic mammals of this Province in the state of Tamaulipas are: *Sylvilagus floridanus connectens; S. audubonii parvulus; Lepus californicus merriami; Perognathus merriami merriami; Dipodomys ordii compactus; Orzomys melanotis carrorum; Reithrodontomys fulvescens intermedius; Peromyscus boylii ambiguus; Canis latrans texensis; C. l. microdon; C. lupus monstrabilis; Taxidea taxus berlandieri; Mephitis mephitis varians; Felis pardalis albescens; Trichechus manatus latirostris;* and *Odocoileus virginianus texanus.*

Many other kinds of mammals occur mainly in the Tamaulipan Province but are not listed above because they occur also in one or more of the other provinces.

The Sierra de Tamaulipas is placed in the Tamaulipan Biotic Province because the fauna, especially of non-flying mammals, is closely related to that of the rest of the Province. Nevertheless, many mammals found in this Sierra are tropical in relationship. This is especially true of the bats. Therefore, most of the tropical bats that occur in Tamaulipas occur in the Veracruzian Biotic Province and in the Sierra de Tamaulipas.

Potosian Biotic Province

This Province occupies all of the Sierra Madre Oriental and, therefore, the southwestern part of the state.

The vegetation in general is Pine-oak Forest, in which the most common trees are *Abies religiosa, Pinus flexilis, P. patula, P. mon-*

tezumae, P. teocote, Populus tremuloides, Juniperus flaccida, Quercus arizonica, Q. clivicola and *Q. polymorpha.*

In his study of plants of the Gómez Farías area, Martin (1958) recorded several different types of vegetation, which in part can be placed in the Potosian Biotic Province, especially those types that occur to the northwest of the Cloud Forest. In addition to the Cloud Forest, Martin recognized Humid Pine-oak Forest, Dry Oak-pine Forest, Chaparral, Thorn Forest and Scrub, and Thorn Desert.

The only mammal endemic to the Potosian Province in Tamaulipas is *Cryptotis pergracilis pueblensis.* Other mammals that occur mainly in this Province are: *Sorex saussurei; Notiosorex crawfordi; Glaucomys volans herreranus; Cratogeomys castanops planifrons; Perognathus nelsoni; Liomys irroratus alleni; Reithrodontomys fulvescens griseoflavus; Microtus mexicanus subsimus; Ursus americanus eremicus; Conepatus leuconotus texensis;* and *Odocoileus hemionus.*

The fauna of this Province is a mixture of elements with tropical affinities on the east side of the Sierra Madre and with those of the Mexican Plateau on the west side.

Chihuahuan Biotic Province

This Province occurs in Tamaulipas only in a small portion of the Central Plateau physiographic region and occupies the southwesternmost part of the state.

The vegetation is of two types: Desert or Mesquite-grassland. The last is like that described for the Tamaulipan Biotic Province. In the Desert type the dominant plants are the cactus, *Opuntia leptocaulis,* and yuccas, *Yucca filifera* and *Y. potosina.* Subdominants are mariola, guayule, *Agave lechugilla, A. stricta* or *Larrea divaricata.* Along stream banks mesquite, *Prosopis juliflora,* can be found.

No endemic mammals of the Chihuahuan Province are known in Tamaulipas. Mammals that occur principally in this Province are: *Dipodomys merriami atronasus; D. ordii durranti; Peromyscus melanophrys consobrinus; P. difficilis petricola; Onychomys torridus subrufus;* and *Neotoma albigula subsolana.*

Veracruzian Biotic Province

This Province includes the southern part of the Coastal Plain physiographic region, south of the Sierra de Tamaulipas and Soto la Marina. But the exact line between this Province and the Tamaulipan Province to the north is difficult to draw. The northern boundary of the Veracruzian Province is the line between the Nearctic and Neotropical regions in eastern México.

Vegetation of most of the Veracruzian Biotic Province is Tropical Deciduous Forest. This Forest is made up of *Tabebuia, Ipomea, Bombax,* and *Conzattia,* along with some *Ceiba, Bursera,* and *Psidium.*

The mammalia fauna of the Veracruzian Biotic Province is tropical in nature. This is especially true of the bats. Representatives of the tropical genera *Micronycteris, Sturnira, Artibeus, Enchistenes, Desmodus, Diphylla,* and *Molossus* have their northern distributional limits in this Province. The non-flying mammals characteristic of the Province in Tamaulipas are: *Philander opossum pallidus; Marmosa mexicana; Ateles geoffroyi velerosus; Geomys tropicalis; Oryzomys melanotis rostratus; O. alfaroi huastecae; O. fulvescens engracie* (endemic to this Province in Tamaulipas); *O. f. fulvescens; Reithrodontomys mexicanus; Peromyscus orchraventer* (endemic); *Neotoma micropus angustapalata; Eira barbara senex; Felis wiedii oaxacensis;* and *Mazama americana temama.*

BARRIERS AND ROUTES OF MOVEMENT

The distributional patterns and affinities of the mammalian fauna of Tamaulipas suggest possible routes of migration and barriers that limited or controlled movements of the mammals.

Mammals may have reached Tamaulipas by way of a Northern route, a Trans-plateau route, a Montane route, or a Tropical route (Fig 3).

The Northern route permitted species of mammals from the temperate region to the north to enter the Tamaulipan Biotic Province from or *via* Texas. Several came from the Great Plains, and a few came from the eastern part of the United States. Also, a few mammals that may have originated in the Tamaulipan Province moved northwards. Some of these, according to Dice (1937:267) were *Liomys irroratus texensis, Peromyscus leucopus texensis,* and *Lepus californicus merriami.* Other mammals thought to have moved north by this route are *Didelphis marsupialis, Dasypus novemcinctus, Oryzomys palustris, Nasua narica,* and *Tayassu tajacu.* Some mammals that passed through Tamaulipas into Texas have extended their geographic ranges far north of Texas.

Mammals that came *via* the Trans-plateau route (name proposed by Baker, 1956:146) came no farther into Tamaulipas than the Chihuahuan Biotic Province. They encountered the barrier formed by the Sierra Madre Oriental. These mammals were listed in the account of the Chihuahuan Biotic Province.

The route that Baker (1956:146) termed the "Southern Route" I here term the Montane route because I think it was used for movement southward as well as northward.

The Montane route was used by mammals of boreal affinities (*Microtus* and *Neotoma*), that moved into Tamaulipas from the

north; also in this category are bats of the family Vespertilionidae. For movement from south to north, the route was used by several species native to México, for example, *Cratogeomys castanops*. The

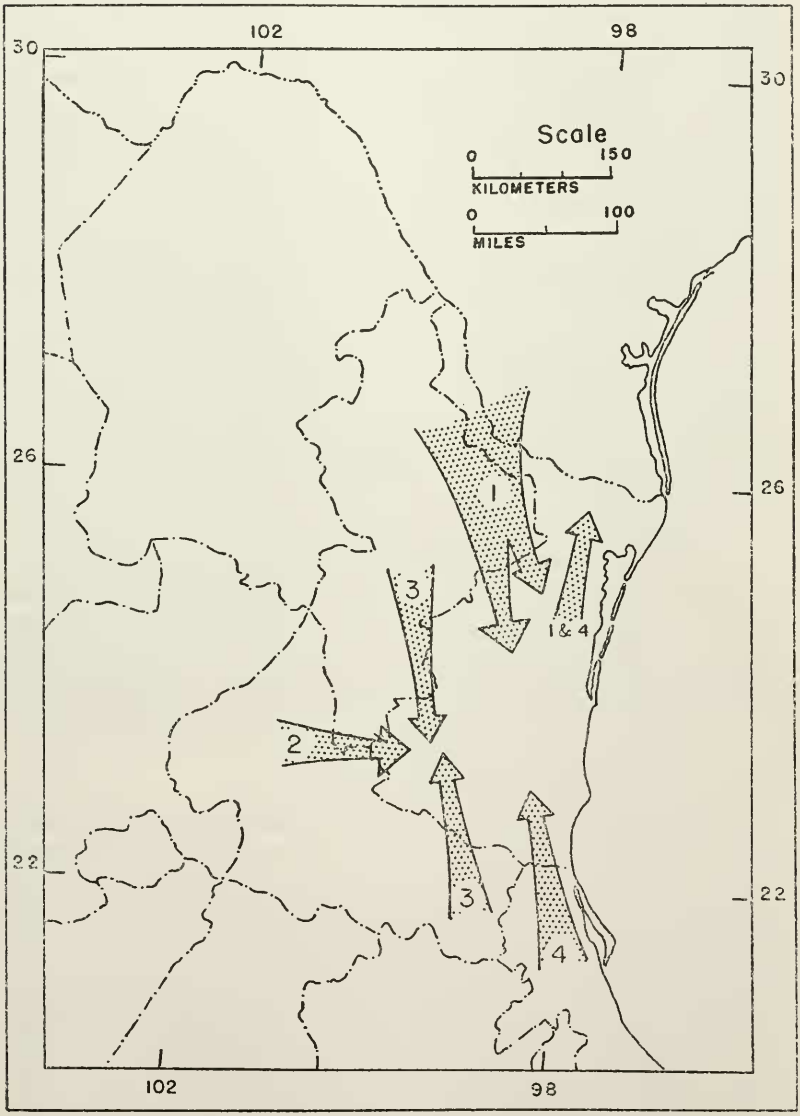

FIG. 3. Routes of movement: 1 Northern; 2 Trans-Plateau; 3 Montane; 4 Tropical.

seaward slope of the montane area has enabled some tropical mammals to move farther north than they have done at higher and lower elevations. *Philander opossum* seems to be an example.

The fourth route, the Tropical one, was used by mammals of tropical origin. Most moved into Tamaulipas only as far as the Veracruzian Biotic Province. The principal mammals that have used this route are the bats and marsupials, but *Sylvilagus brasiliensis, Ateles geoffroyi, Heterogeomys hispidus, Eira barbara,* and *Mazama americana* also can be included here. Some tropical mammals, as was pointed out previously, not only reached Tamaulipas but have moved through the state and far northward.

The major barriers to dispersal of mammals in Tamaulipas are three (see Fig. 2). Two of them, the Río Grande Barrier and the Sierra Madre Barrier, are physiographical, but the Tropical Barrier is maintained by a combination of environmental factors. The three barriers separate the four Biotic Provinces in Tamaulipas. The Sierra Madre Oriental, which forms the Potosian Biotic Province, lies between the Tamaulipan and Chihuahuan provinces. The Tropical barrier separates the Tamaulipan and Veracruzian biotic provinces.

The Río Grande, as was pointed out by R. H. Baker (1956:146), has low banks, is relatively shallow, and does not form an effective barrier for most mammals. For only two species, insofar as I know, has the Río Grande constituted a barrier. *Cratogeomys castanops* has not entered southeastern Texas from México, and *Spermophilus spilosoma* has not entered México from southeastern Texas except on the coastal barrier beach. Alvarez (1962:124) postulated that the beach was the route by which S. *spilosoma* arrived at La Pesca where the barrier beach meets the mainland.

The Sierra Madre Barrier is a good filter for some small mammals, especially for those that occur on the Mexican Plateau and those of tropical origin. The mammals that occur on each side of the Sierra are listed in accounts of the Chihuahuan (west side), Veracruzian and Tamaulipan (east side) biotic provinces.

The Tropical Barrier is formed mainly by a climatic complex (probably a change in temperature and rainfall) in the coastal region at or about the latitude of Soto la Marina, where no geographic barrier is found. In the western and central part of the Tropical Barrier, the climatic factor is supported by a geographic factor. The Sierra Madre Oriental is in the west and the Sierra de Tamaulipas is in the center. The several mammals that are affected

by this barrier are listed in the accounts of the Veracruzian and Tamaulipan biotic provinces.

A peculiar pattern of distribution is that presented by *Scalopus inflatus* and *Geomys tropicalis*. Both are the only known species of their genera in northeastern México. Each is isolated from other species of its genus. The nearest known record of *Scalopus* is 45 miles northward and the nearest record of *Geomys* is approximately 165 miles northward. A possible explanation for the distribution of these two kinds is that each was widely distributed in one of the glacial periods and when the glacier receded to the north these animals remained in Tamaulipas, where they evolved and formed distinct species. The two species, *G. tropicalis* and *S. inflatus*, are fossorial and for this reason probably were able to resist inhospitable climates better than non-burrowing species.

HISTORY OF MAMMALOGY

In Tamaulipas the first exploration directed in substantial measure toward finding out about the mammalian fauna, at least as far as I know, was made by Dr. L. Berlandier, who traveled mainly in the northern half of the state. His collections provided specimens of several previously unknown mammals, which were described by Baird (1858). The original manuscript of Berlandier never has been published. About 1880 Dr. E. Palmer collected mammals in the southern part of Tamaulipas, in the area around Tampico. The results of his exploration were reported by J. A. Allen (1881). E. W. Nelson and E. A. Goldman twice collected in Tamaulipas (Goldman, 1951). In 1898 they visited and collected mammals in the southern part of the state, around Tampico, Altamira, Victoria, Forlón, and Miquihuana. In 1901-1902 they visited the area between Nuevo Laredo and Bagdad, then went south to Soto la Marina and Victoria. From their collections several species and subspecies have been described. Between 1910 and the early 1920's little was done in the way of scientific exploration because of the Mexican Revolution.

From 1930 on, several expeditions yielded new information about the native mammals. In that year L. B. Kellum visited the Sierra San Carlos. The results were reported by Dice (1937). Another important collection from Tamaulipas was made by Marian Martin in the area of Gómez Farías. Mammals collected by her were reported by Goodwin (1954). Hooper (1953) also reported specimens from Gómez Farías but included in his report records of mammals collected in other areas as well. In 1950 E. R. Hall and C. von

Wedel made a trip to the barrier beach in the northeastern part of the state and collected several kinds of mammals among which three were described as new by Hall (1951).

The report here presented is based upon specimens in the Museum of Natural History of The University of Kansas that were collected mainly by the persons named beyond. Gerd H. Heinrich and his wife Hilda collected in 1952 and 1953 in the areas around Miquihuana, Ciudad Victoria, Soto la Marina, Sierra de Tamaulipas, and Altamira. W. J. Schaldach collected in 1949 and 1950 in the Sierra Madre Oriental south of Ciudad Victoria; he returned to Tamaulipas in 1954 in company with V. Grissino and worked in the Sierra Madre Oriental south and north of Ciudad Victoria. In 1961 P. L. Clifton and J. H. Bodley collected in the northwestern part of the state and in the western part, around Tula, Nicolás, and Tajada. Some students and staff members of the Museum have occasionally collected in Tamaulipas.

As a result of all the mentioned expeditions and others, 32 species and subspecies have been described with type localities in Tamaulipas. They are:

Altamira
- *Lepus californicus altamirae* Nelson
- *Sciurus aureogaster aureogaster* (Cuvier) (by restriction)
- *Sciurus deppei negligens* Nelson
- *Geomys tropicalis* Goldman

Antiguo Morelos, 8 mi. N of
- *Tadarida laticaudata ferruginea* Goodwin

Brownsville (Texas), 45 mi. from
- *Scalopus inflatus* Jackson

Charco Escondido
- *Perognathus hispidus hispidus* Baird
- *Neotoma micropus micropus* Baird

El Carrizo
- *Peromyscus ochraventer* Baker

Gómez Farías
- *Heterogeomys hispidus negatus* Goodwin

Hacienda Santa Engracia
- *Oryzomys fulvescens engracia* Osgood

Jaumave
- *Dipodomys ordii durranti* Setzer

La Pesca, 1 mi. E of
- *Spermophilus spilosoma oricolus* Alvarez

Matamoros
- *Cryptotis parva berlandieri* (Baird)
- *Lasiurus intermedius intermedius* (H. Allen)
- *Dasypus novemcinctus mexicanus* Peters (by restriction)

Cratogeomys castanops tamaulipensis Nelson and Goldman
Felis yagouaroundi cacomitli Berlandier

Matamoros, 88 mi. S, 10 mi. W of
Lepus californicus curti Hall
Dipodomys ordii parvabullatus Hall
Sigmodon hispidus solus Hall

Mier
Canis latrans microdon Merriam

Miquihuana
Idionycteris mexicanus Anthony (*Plecotus phyllotis*)
Cratogeomys castanops planifrons Nelson and Goldman
Onychomys torridus subrufus Hollister
Neotoma albigula subsolana Alvarez
Odocoileus virginianus miquihuanensis Goldman and Kellogg

Rancho del Cielo, 5 mi. NW Gómez Farías
Cryptotis mexicana madrea Goodwin
Reithrodontomys megalotis hooperi Goodwin

Rancho Santa Ana, about 8 mi. SW Padilla
Oryzomys melanotis carrorum Lawrence

Sierra de Tamaulipas, 10 mi. W, 2 mi. S Piedra
Myotis keenii auriculus Baker and Stains

Sierra San Carlos, 12 mi. NW San Carlos
Peromyscus pectoralis collinus Hooper

CONSERVATION

A relatively large number of the species of Mexican big game occurs in Tamaulipas because its geographic position permits it to have species from the tropics and those from the northern plains and mountains. Eight of the 11 Mexican species that are considered as Big Game are recorded from the state. Until this century Tamaulipas was not densely populated by man either in the pre-colonial period or thereafter. Therefore many species of game are still relatively abundant.

Of the eight species that originally lived in Tamaulipas, the mule deer, brocket, and black bear never have been abundant there and now are in danger of extirpation. The pronghorn was also rare in the state and now has been extirpated as it has been in many other parts of México. The white-tailed deer, javalin, jaguar, and puma are still abundant in suitable habitats. The white-tailed deer is found almost everywhere in the state; in some areas it damages cornfields, and for this reason is killed by natives who eat the meat and sell the skins. The price of skins is low; in 1959 at Ciudad Mante tanners paid natives less than one dollar (10.00 Mexican pesos) per hide. Some idea of the abundance of deer in Tamaulipas is provided by our having found in one tanner's shop, in 1959 at

Ciudad Mante, about 500 deer skins. Besides these, we found about 65 skins of other species—jaguar, bear, ocelot, puma, margay, and raccoon. Additionally there was a large number of coati skins. Considering that México has no professional trappers and that commerce in skins of wild animals is illegal, it is felt that the number of skins found in the tanner's shop indicated a relative large population of game mammals.

The number of species of small game also is large. Some species are killed by natives for food, but most are killed in order to protect the cultivated crops, which are injured mainly by rabbits and squirrels.

Baker (1958) pointed out that the future of the game species in the northern part of México was not encouraging. He gave valid reasons for his view. In Tamaulipas, however, in some respects the outlook is more encouraging because there are many areas in which with a minimum of effort the authorities can save a good number of species.

As Baker (*op. cit.*) remarked, the fauna in México is declining mainly because many areas recently have been cultivated for the first time. Also, better roads have enabled hunters to reach areas that formerly were natural refuges for wild animals. Many times it has been said that the populations of wild animals were declining in México because the number of game wardens is too small to protect game in all parts of the country. In some ways this is true but it seems that the problem is really one of education. The people do not realize that the animals are part of nature and therefore have the same right to live that man has. Most people see only the bad side of the animals' activities and never consider the benefit that wild mammals provide for man. A typical case is that of the coyote, which is oftentimes killed only because it is a coyote. Sometimes individual coyotes do kill domestic animals, but the people seem never to understand that the coyote destroys a large number of mice, rabbits, and insects as has been shown by studies of the contents of coyote stomachs.

The Mexican Government at this time is making a concentrated effort to provide schools in all parts of the country and is formulating new programs of education. In this official program some lectures in conservation are needed with reference to the animal life. I know that some education now is given to people with respect to conservation of the water, soil, and forest, but gather that there is little that covers also conservation of animals.

I do not deny the necessity for some natives to kill wild animals.

People need to eat fresh meat and for some it is almost impossible to obtain meat in any other way than by killing wild animals. Some natives cannot afford to purchase meat in the markets or they live too far from any village or city to do so. Also, natives need to protect their cultivated areas; some of them have only four to six acres of land, on which corn is the only crop. When one deer in a night can destroy part of the corn, and in some areas not only one deer but several invade a field, and when one considers that besides deer there are rabbits, squirrels, raccoons, and coati, to name only some animals that feed on the corn, we find that the small cornfield at the end of the season may not contain any corn to harvest. It is understandable, therefore, that the natives kill the animals. In this way they protect their cultivated fields, obtain food and sometimes money for the skins. Many natives, however, destroy the wildlife only for pleasure or to obtain money for skins and meat, which sometimes is sold to restaurants.

Probably the best solution for the problem of conservation of wild animals is the establishment of wildlife refuges. In Tamaulipas, at least three refuges are needed in order to preserve the mammalian wildlife. These areas would serve also as a refuge for game birds and other vertebrates. A large area with suitable habitat for white-tailed deer, brocket, jaguar, puma, javalin, and fox could be established in the Sierra de Tamaulipas, which presents favorable habitat for all of the species named. A second area that does not need to be so large as the first could be established in the Sierra Madre Oriental, probably including some part of Nuevo León, where the black bear and the mule deer find suitable habitat. Probably the beaver can be introduced in the streams of the high mountains; beaver live in the same Sierra a little farther north in Nuevo León. The three species mentioned are in imminent danger of disappearing from Tamaulipas, if they have not already disappeared. The third refuge could be in some area of the northern part of the state near the Río Grande. This refuge should give protection to the beaver—a rare animal in México and in danger of extirpation over all the country. The pronghorn also would find suitable habitat in this area, but would have to be reintroduced there. With the establishment of these three refuges and with good management the fauna of Tamaulipas could be saved from extinction, would provide some recreation for sportsmen, and especially for the people in general who wish to study, photograph, or merely observe the native animal life.

The time is excellent for the establishment of the wildlife refuges

in Tamaulipas because large areas are still in Federal ownership and because a considerable number of animals remain. Other favorable factors are that roads are not yet good in the areas proposed for refuges, the human population is low, and agriculture consequently is not practiced. But, with the rapid increase in population in México, these favorable conditions will change in a few years and it will be almost impossible to establish the refuges then.

METHODS AND ACKNOWLEDGMENTS

The families, genera, and species recorded in this report are arranged following Hall and Kelson (1959). Subspecies are in alphabetical order under the species. Remarks are given on natural history in each species account, if information is available. Discussion of subspecies known from the state is included. Under each subspecies, the citation to the original description is given with mention of type locality. Next is the citation to the first usage of the current name-combination. Then, synonyms are listed if there be such in the sense that original descriptions of the alleged species or subspecies had type localities in Tamaulipas.

Measurements, unless otherwise noted, are of adults and are given in millimeters. External measurements are in the following order: total length; length of tail vertebrae; length of hind foot; length of ear from notch. Capitalized color terms are those of Ridgway, Color Standards and Color Nomenclature, Washington, D. C., 1912. Capital letters designate teeth in the upper jaws and lower case letters designate teeth in the lower jaws; for example, M2 refers to the second upper molar and m2 refers to the second lower molar.

The localities of specimens examined and additional records are listed from north to south and their geographic positions can be found in the gazetteer and on the map (Fig. 4).

Most of the specimens examined are in the Museum of Natural History of the University of Kansas. Unless otherwise indicated, catalogue numbers relate to that collection. A few specimens from other collections were seen. Abbreviations identifying those collections are: UMMZ, the University of Michigan Museum of Zoology; AMNH, the American Museum of Natural History; and GMS, George M. Sutton collection (University of Oklahoma).

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GAZETTEER

The specimens examined and additional records are listed with reference to the following place names. The geographic position of each was taken from the maps of the American Geographical Society of New York, scale 1:1,000,000, and the Atlas Geográfico de la República Mexicana, scale 1:500,000.

Acuña.—23°26′, 98°25′.
Agua Linda.—23°05′, 99°14′.
Aldama.—22°55′, 98°04′.
Alta Cima.—23°05′, 99°11′.
Altamira.—22°23′, 97°56′.
Antiguo Morelos.—22°33′, 99°05′.
Aserradero del Infernillo [Infiernillo]. —23°04′, 99°13′.
Aserradero del Pariso.—22°59′, 99°15′.
Bagdad.—25°57′, 97°09′.
Camargo.—26°20′, 98°50′.
Cerro del Tigre.—23°04′, 99°17′.
Chamal, 22°49′, 99°14′.
Charco Escondido.—25°46′, 98°22′.
Ciudad Victoria.—23°45′, 99°07′.
Cueva de Quintero.—22°39′, 99°02′.
Cueva La Esperanza.—23°55′, 99°17′.
Cueva La Mula.—see La Mula.
Cueva Los Troncones.—23°49′, 99°15′.
Cues.—22°58′, 98°13′.
Ejido Santa Isabel.—23°14′, 99°00′.
El Carrizo.—23°15′, 99°05′.
El Encino.—23°08′, 99°07′.
El Mante (Cd. Mante).—22°45′, 99°01′
El Mulato.—24°54′, 98°57′.
El Pachón.—22°36′, 99°03′.
Forlón.—23°14′, 98°49′.
Gómez Farías.—23°02′, 99°10′.
Guemes.—23°55′, 99° 00′.
Guerrero.—26°48′, 99°20′.
Hacienda Santa Engracia.—24°02′, 99°12′.
Hidalgo.—24°15′, 99°26′.
Jaumave.—23°24′, 99°23′.
Joya de Salas.—23°11′, 99°17′.
Joya Verde.—23°35′, 99°14′.
La Azteca (Ejido).—23°05′, 99°08′.
La Mula.—23°36′, 99°17′.
La Pesca.—23°47′, 97°48′.
La Purisima.—24°18′, 99°28′.
La Vegonia.—24°40′, 99°05′.
Limón.—22°49′, 99°00′.
Marmolejo.—24°38′, 99°00′.
Matamoros.—25°55′, 97°30′.
Mesa de Llera.—23°20′, 99°01′.
Mier.—26°27′, 99°09′.
Miquihuana.—23°27′, 99°46′.
Nicolás.—23°21′, 100°04′.
Nuevo Laredo.—27°30′, 99°30′.
Ocampo.—22°50′, 99°21′.
Ojo de Agua.—22°35′, 98°58′.
Padilla.—24°01′, 98°46′.
Palmillas.—23°18′, 99°33′.
Piedra.—23°30′, 98°06′.
Rancho del Cielo.—23°04′, 99°12′.
Rancho Pano Ayuctle.—23°07′, 99°13′.
Rancho Santa Rosa.—23°58′, 99°16′.
Rancho Tigre.—22°54′, 99°20′.
Rancho Viejo.—23°02′, 99°13′.
Reynosa.—26°06′, 98°15′.
Río Bravo (Town).—26°04′, 98°08′.
Río Corono [Corona].—23°50′, 98°50′.
San Antonio.—23°08′, 99°23′.
San Carlos.—24°35′, 98°57′.
San Fernando.—24°51′, 98°09′.
San José.—24°41′, 99°06′.
San Miguel.—24°45′, 99°05′.
Santa María.—23°31′, 98°41′.
Santa Teresa.—25°27′, 97°29′.
Savinito.—(?)23°43′, 98°51′.
Soto la Marina.—23°46′, 98°15′.
Tajada.—23°16′, 99°55′.
Tamaulipeca.—24°45′, 99°05′.
Tampico.—22°12′, 97°51′.
Tula.—23°00′, 99°42′.
Villagran.—24°29′, 99°29′.
Villa Mainero.—24°34′, 99°36′.
Washington Beach.—25°53′, 97°09′.
Xicotencatl.—23°00′, 98°57′.
Zamorina.—23°20′, 97°58′.

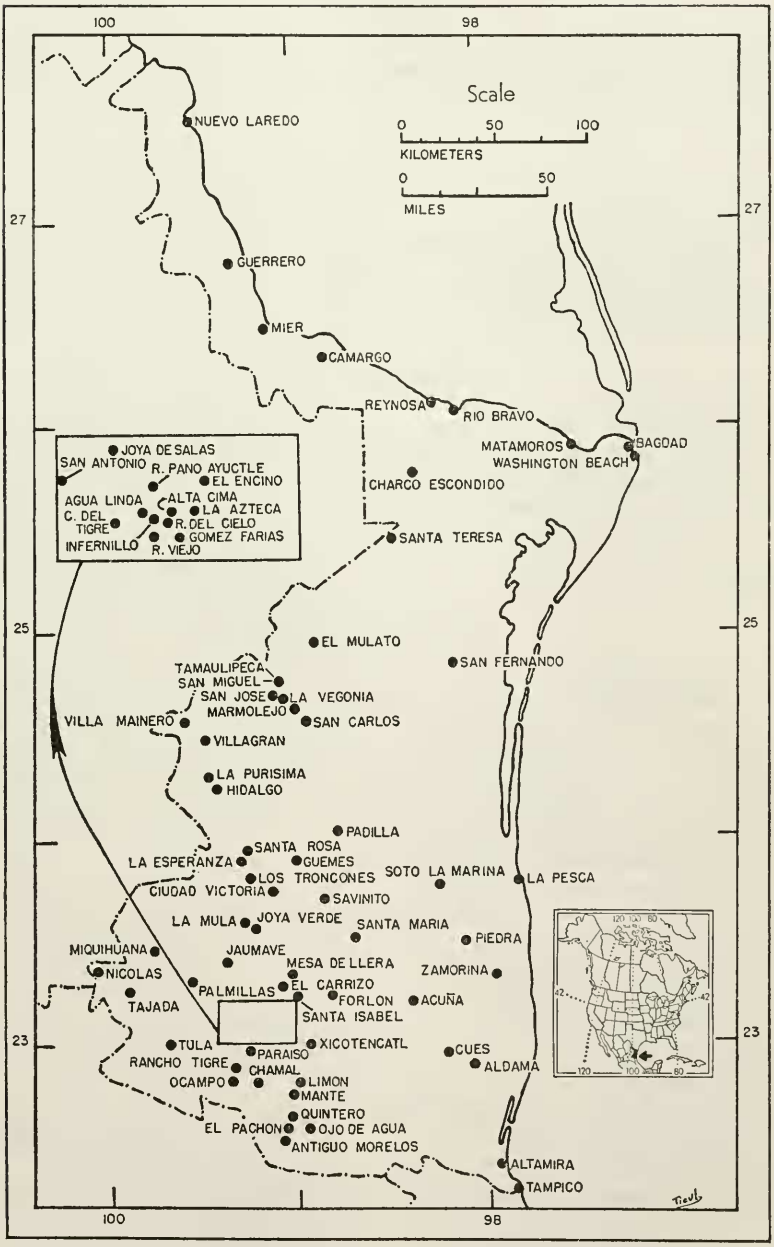

FIG. 4. Place names, in Tamaulipas, mentioned in text.

CHECK-LIST

The 146 kinds of native mammals of 120 species found in Tamaulipas belong to 72 genera of 25 families of 10 orders. Non-native mammals introduced by man are not included.

Class MAMMALIA

Order MARSUPIALIA

Order INSECTIVORA

Order CHIROPTERA

Order ARTIODACTYLA

ACCOUNTS OF SPECIES AND SUBSPECIES

Didelphis marsupialis

Opossum

The opossum occurs throughout Tamaulipas but is commonest in the south, especially in the areas of tropical forest and along water courses. Most of the specimens examined were caught in steel traps baited with remains of small animals (mostly mammals and birds, but one trap was baited with the head of a black bass). At Villa Mainero five individuals were caught in one night in five of seven traps scented with spilogale musk. These traps were set in runways along a thick thorn-brush fence, which separated a cornfield from thorn-brush desert. Along the Río Purificación 36 kilometers north and 10 kilometers west of Victoria an opossum was eaten in a trap by a small carnivore, probably a felid judging from tracks around the trap.

A female with 14 pouch young was taken in June in the Sierra de Tamaulipas and weighed 1350 grams; a March-taken female with nine small young in her pouch, from Soto la Marina, weighed 1800 grams. A male from the Sierra de Tamaulipas also weighed 1800 grams.

Didelphis marsupialis californica Bennett

1833. *Didelphis Californica* Bennett, Proc. Zool. Soc. London, p. 40, May 17, type locality restricted to Sonora by Hershkovitz (*infra*).

1951. *Didelphis marsupialis californica*, Hershkovitz Fieldiana-Zool., Chicago Nat. Hist. Mus., 31(47):548, July 10.

Distribution in Tamaulipas.—Southeastern part of state, north at least to Soto la Marina.

In studying Tamaulipan specimens, I was mindful that Hershkovitz (1951:550) regarded all opossums of this species in México as a single subspecies, even though J. A. Allen (1901) recognized two subspecies in the northeastern part of the Republic. According to Allen (p. 172), *D. m. texensis* (to which he ascribed a distribution in Texas and adjoining Tamaulipas) was described as: "Similar in coloration to *D. marsupialis* (*typica*) [*D. m. californica*], but with a relatively longer tail, longer nasals, usually terminating posteriorly in an acute angle, instead of being rounded or more or less abruptly truncated on the posterior border." The available material from Tamaulipas can be divided into two groups on the basis of shape and proportion of the nasals. In opossums from the southeast the nasals are truncate posteriorly and average 47.0 (45.1-48.4) per cent of the condylobasal length, whereas in specimens from elsewhere

the nasals are acute posteriorly and average 50.7 (49.7-51.8) per cent of the condylobasal length. Tentatively, therefore, I follow Allen in recognizing two subspecies in northeastern México.

I note no especial difference in length of tail between *texensis* and *californica*. Hooper (1951:3) followed Hershkovitz in reporting as *californica* a specimen from Rancho del Cielo; to me, specimens from this area are referable to *texensis*.

One of the specimens from two miles south and 10 miles west of Piedra (54917) has a supernumerary tooth lingual and anterior to the last upper molar. The tooth is small (2.7 mm. long) and peglike.

Records of occurrence.—Specimens examined, 8: 3 mi. N Soto la Marina, 1; 2 mi. S, 10 mi. W Piedra, 12,000 ft., 7.

Additional records: Matamoros (Baird, 1858:234); Altamira (J. A. Allen, 1901:167).

Didelphis marsupialis texensis J. A. Allen

1901. *Didelphis marsupialis texensis* J. A. Allen, Bull. Amer. Mus. Hist., 14:172, June 15, type from Brownsville, Cameron County, Texas.

Distribution in Tamaulipas.—Northern, central and southwestern parts of state.

Records of occurrence.—Specimens examined, 7: San Fernando, 180 ft., 1; Villa Mainero, 1700 ft., 2; 36 km. N, 10 km. W Cd. Victoria (1 km. E El Barretal), on Río Purificación, 1; 12 km. N, 4 km. W Cd. Victoria, 1; Ejido Santa Isabel (12 km. S Llera), 2 km. W Pan-American Highway, 2000 ft., 1; 4 mi. N Jaumave, 2500 ft., 1.

Additional records: Matamoros (J. A. Allen, 1901:173); El Mulato, San Carlos Mts. (Dice, 1937:249); Rancho del Cielo (Hooper, 1953:3).

Philander opossum pallidus (J. A. Allen)

Four-eyed Opossum

1901. *Metachirus fuscogriseus pallidus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 14:215, July 3, type from Orizaba, Veracruz.

1955. *Philander opossum pallidus,* Miller and Kellogg, Bull. U. S. Nat. Mus., 205:8, March 3.

Distribution in Tamaulipas.—Known only from along eastern side of Sierra Madre Oriental, north to vicinity of La Purisima.

In Tamaulipas, the four-eyed opossum is seemingly common at relatively low elevations in the Tropical Deciduous Forest along the eastern side of the Sierra Madre Oriental, but the species is not restricted to this area as one specimen is available from a place seven kilometers southwest of La Purisima, in the drier forest of west-central Tamaulipas. The highest elevation at which individuals have been taken in the state is approximately 2500 feet.

Specimens obtained two kilometers west of El Carrizo were caught in steel traps that were baited with the bodies of small birds and mammals and that were set in trails leading through a fence

of piled logs that separated a cornfield from adjacent forest. At Rancho Pano Ayuctle, some individuals were trapped in steel sets baited with scraps of meat; others were shot at night in the forest along the Río Sabinas. Schaldach reported in his notes that four-eyed opossums robbed trap lines set for small mammals at Rancho Pano Ayuctle. W. W. Dalquest trapped an individual seven kilometers southwest of La Purisima using the body of an armadillo as bait. The natives of southern Tamaulipas refer to this animal as "tlacuache cuatrojos."

Tamaulipan specimens of *P. o. pallidus* differ from topotypes and other specimens from the vicinity of the type locality in averaging somewhat paler dorsally and slightly smaller in cranial dimensions when specimens of equal age are compared. They differ also in having a longer terminal area of white on the tail, 53.1 per cent (43.3-62.8) of the length of the tail in 13 specimens from Tamaulipas, and 38.7 (30.9-48.2) per cent in 14 specimens from the vicinity of the type locality of *pallidus* in Veracruz; specimens from northern Veracruz are intermediate between the two mentioned populations in amount of white on the tail. Baker (1951:210) noted that the specimens from two kilometers west of El Carrizo had "proportionately longer tails than typical *P. o. pallidus* from central Veracruz," but I do not find this character to be consistent in the more abundant material now available.

Measurements.—External and cranial measurements of three adults, a male and female from Rancho Pano Ayuctle and a male from two kilometers west of El Carrizo, respectively, are as follows: 577, 580, 568; 294, 288, 290; 46, 43, 43; 40, 42, 37; condylobasal length, ——, 70.1, 69.9; palatal length, 43.2, 42.3, 41.9; lambdoidal breadth, 23.6, 22.0, 22.7; alveolar length of maxillary toothrow, 29.5, 28.4, 29.0.

Records of occurrence.—Specimens examined, 15: 7 km. SW La Purisima, 1; Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft., 1; Rancho Pano Ayuctle, 25 mi. N Mante and 3 km. W Pan-American Highway, 300 ft., 7; 10 km. N, 8 km. W El Encino, 400 ft., 3; 2 km. W El Carrizo, 2500 ft., 3 (one specimen deposited in Instituto de Biología, México).

Marmosa mexicana mexicana Merriam

Mexican Mouse-opossum

1897. *Marmosa murina mexicana* Merriam, Proc. Biol. Soc. Washington, 11:44, March 16, type from Juquila, 1500 m., Oaxaca.

1902. *Marmosa mexicana,* Bangs, Bull. Mus. Comp. Zool., 39:19, April.

Distribution in Tamaulipas.—Known only from Aserradero del Infernillo (Goodwin, 1954:3) in southwestern part of state.

Marmosa has been reported from Tamaulipas only by Goodwin (1954:3), who examined "15 rami, and one fragment of maxillary" that were found in a cave. Possibly they were remains from owl pellets.

Sorex saussurei saussurei Merriam

Saussure's Shrew

1892. *Sorex saussurei* Merriam, Proc. Biol. Soc. Washington, 7:173, September 29, type from N slope Sierra Nevada de Colima, approximately 8000 ft., Jalisco.

Distribution in Tamaulipas.—Known only from Miquihuana.

Jackson (1928:156) reported four specimens from Miquihuana, which he incorrectly located in Nuevo León.

Cryptotis parva berlandieri (Baird)

Least Shrew

1858. *Blarina berlandieri* Baird, Mammals, *in* Repts. Expl. Surv. . . ., 8(1):53, July 14, type from Matamoros, Tamaulipas.

1941. *Cryptotis parva berlandieri*, Davis, Jour. Mamm., 22:413, November 13.

Distribution in Tamaulipas.—Throughout state.

A female taken on July 5, one mile south of Altamira, carried three embryos 5 mm. in crown-rump length. A female from the same locality and another taken on June 6 in the Sierra de Tamaulipas were lactating. Weight of each of six males was 5.0 grams.

Records of occurrence.—Specimens examined, 9: Sierra de Tamaulipas, 10 mi. W, 2 mi. S Piedra, 1200 ft., 1; 1 mi. S Altamira, 8.

Additional records: Matamoros (Baird, 1858:53); 9 km. N Rancho Tigre (Goodwin, 1954:3).

Cryptotis pergracilis pueblensis Jackson

Slender Small-eared Shrew

1933. *Cryptotis pergracilis pueblensis* Jackson, Proc. Biol. Soc. Washington, 46:79, April 27, type from Huachinango, 5000 ft., Puebla.

Distribution in Tamaulipas.—Known only from Aserradero del Paraiso.

The only report from Tamaulipas of this small shrew is that of Goodwin (1954:3) who listed a cranium and mandible, possibly of the same individual, found on the floor of a cave. Goodwin referred the remains to *pueblensis* because of the "noticeably broader and heavier rostrum than in . . . *C. parva berlandieri* from Rancho Tigre."

Cryptotis mexicana madrea Goodwin

Mexican Small-eared Shrew

1954. *Cryptotis mexicana madrea* Goodwin, Amer. Mus. Novit., 1670:1, June 28, type from Rancho del Cielo, 5 mi. NW Gómez Farías, 3500 ft., Tamaulipas.

Distribution in Tamaulipas.—Known only from the type locality and vicinity thereof.

This subspecies is known only from two complete specimens, six crania and four rami collected in two different localities—the type

locality and Aserradero del Infernillo, only seven kilometers from the type locality. All the specimens were examined and reported by Goodwin (1954:1; 1954:4). The type specimen "was taken in a low section of an overgrown ditch" and the other complete specimen was trapped in a stone wall that separated an orchard from a pasture. The six skulls were found in owl pellets.

Notiosorex crawfordi (Coues)

Crawford's Desert Shrew

1877. *Sorex (Notiosorex) crawfordi* Coues, Bull. U. S. Geol. and Geog. Surv. Territories, 3:651, May 15, type from near old Fort Bliss, approximately 2 mi. above El Paso, El Paso Co., Texas.

1895. *Notiosorex crawfordi,* Merriam, N. Amer. Fauna, 10:32, Dec. 31.

Distribution in Tamaulipas.—Known only from two localities in southwestern part of state.

The two specimens examined were collected in July, one in tropical forest and the other in pine-oak forest; each was a lactating female and each weighed 5 grams.

Judging from Merriam's (1895:32) description, the two females differ from the type and three specimens from San Diego, Texas, in having a unicolored tail and in being slightly larger externally. When more abundant material is available the *Notiosorex crawfordi* of northeastern México probably will be found to represent a new subspecies; for the present I follow Findley (1955:616) in referring Tamaulipan specimens to *N. crawfordi.*

Measurements.—External measurements of the specimens from Jaumave and Palmillas, respectively: 90, 90; 28, 31; 11, 11.5; 8, 8. For cranial measurements see Findley (1955:32).

Records of occurrence.—Specimens examined, 2: Jaumave, 2400 ft., 1; Palmillas, 4400 ft., 1.

Scalopus inflatus Jackson

Tamaulipan Mole

1914. *Scalopus inflatus* Jackson, Proc. Biol. Soc. Washington, 27:21, February 2, type from Tamaulipas, 45 miles from Brownsville, Texas.

Distribution in Tamaulipas.—Known only from the type locality.

Scalopus inflatus is known only from the type specimen, which is imperfect and lacks complete data according to Jackson (1914:21). The type locality is in Tamaulipas, 45 miles from Brownsville, Texas, but the exact direction from Brownsville is unknown; probably the locality was on the road between that town and San Fernando, Tamaulipas, which is south-southwest of Brownsville.

Pteronotus rubiginosus mexicanus (Miller)

Mustached Bat

1902. *Chilonycteris mexicana* Miller, Proc. Acad. Nat. Sci. Philadelphia, 54:401, September 12, type from San Blas, Nayarit.

Distribution in Tamaulipas.—Southern part of state in areas of tropical forest.

Most individuals of this species were taken in mist nets. Northwest of El Encino for example, bats were collected from a net placed in "a strategic position across a narrow opening" (Schaldach, fieldnotes) in a cave near the headwaters of the Río Sabinas; along the same river at Rancho Pano Ayuctle some were taken in a net stretched across a little creek (arroyo). In the cave near El Encino the collector (Schaldach) estimated the population of *P. rubiginosus* at between two and three hundred; at Ojo de Agua this bat was found in the deepest part of a cave in association with *Myotis nigricans.*

Two June-taken females from the Sierra de Tamaulipas were lactating, and weighed 17 and 18 grams.

The generic name *Pteronotus* is employed instead of *Chilonycteris* following Burt and Stirton (1961:24-25). The specific name *rubiginosus* is used in accordance with de la Torre (1955:696). Tamaulipan specimens are assigned to *P. r. mexicana* because they do not differ from specimens of that subspecies from Nayarit, except that the coloration of Tamaulipan specimens averages slightly darker in both color phases.

Specimens of this subspecies from the Sierra de Tamulipas, previously recorded by Anderson (1956:349), are the northernmost reported in eastern México.

Records of occurrence.—Specimens examined, 31: Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra, 1200 ft., 1; Sierra de Tamaulipas, 3 mi. S, 10 mi. W Piedra, 1400 ft., 3; Rancho Pano Ayuctle, 25 mi. N El Mante, 3 mi. W Pan-American Highway, 300 ft., 3; Ojo de Agua, 20 mi. N El Mante, and 3 km. W Pan-American Highway, 300 ft., 2; 10 km. N, 8 km. W El Encino, 400 ft., 22.

Additional records (Goodwin, 1954:4): Aserradero del Paraiso; El Pachón.

Pteronotus davyi fulvus (Thomas)

Davy's Naked-backed Bat

1892. *Chilonycteris davyi fulvus* Thomas, Ann. Mag. Nat. Hist., ser. 6, 10:410, November, type from Las Peñas, Jalisco.

1912. *Pteronotus davyi fulvus*, Miller, Bull. U. S. Nat. Mus., 79:33, December 31.

Distribution in Tamaulipas.—Known only from the two localities reported in this paper.

According to field-notes of Schaldach *et al.*, individuals of *P. d. fulvus* appear when it is almost dark (about 6:30 p. m. in December and January), ordinarily fly about 25 feet above the ground, but occasionally are seen at heights of between 60 and 70 feet (near tops of the largest cypress trees). Most bats flew in a straight line for 10 to 20 yards, then zig-zagged, and repeated the same movements. All specimens examined are in the brown color phase.

Records of occurrence.—Specimens examined, 11: Rancho Santa Rosa, 25 km. N, 13 km. W Cd. Victoria, 260 m., 10; Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft., 1.

Choeronycteris mexicana Tschudi

Mexican Long-tongued Bat

1844. *Choeronycteris mexicana* Tschudi, Untersuchungen über die fauna Peruana . . ., p. 72, type from México.

Distribution in Tamaulipas.—East side of Sierra Madre in southwestern part of state.

Specimens from La Mula were obtained in a small cave, which was inhabited also by *Desmodus rotundus* and *Tadarida brasiliensis*. The specimens from Miquihuana were captured in a mine by a native. Those from four kilometers north of Joya Verde also were taken from a mine. Females obtained in August at La Mula were lactating.

Specimens examined are indistinguishable from *C. mexicana* from Oaxaca and Jalisco. Baker (1956:172) found no differences between Coahuilan and Tamaulipan specimens. Most Tamaulipan specimens are dark grayish, but some are brownish and some are intermediate between the two colors mentioned. Fourteen adults weighed an average of 16.0 (12-18) grams.

Records of occurrence.—Specimens examined, 19: 4 km. N Joya Verde, 4000 ft., 3; La Mula, 13 mi. N Jaumave, 4; Cueva La Mula, 10 km. W Joya Verde, 2400 ft., 2; Miquihuana, 6500 ft., 10.

Mormoops megalophylla megalophylla (Peters)

Peters' Leaf-chinned Bat

1864. *Mormops megalophylla* Peters, Monatsb. preuss. Akad. Wiss., Berlin, p. 381, type from southern México.

Distribution in Tamaulipas.—Throughout state, except possibly west of the Sierra Madre Oriental.

Specimens from the Sierra de Tamaulipas were taken in mist nets in which *Pteronotus rubiginosus*, *Lasiurus borealis*, or *Centurio senex* also were captured. The specimen from Rancho Santa Rosa was shot as it flew at a height of six feet.

Tamaulipan specimens of *Mormoops megalophylla* are here assigned to *M. m. megalophylla* instead of to *M. m. senicula* following Villa and Jimenez (1961:503), who regarded *senicula* as indistinguishable from *megalophylla.*

Weight of four specimens from the Sierra de Tamaulipas averaged 16.2 (15-18) grams.

Records of occurrence.—Specimens examined, 5: Sierra de Tamaulipas, 3 mi. S, 16 mi. W Piedra, 1300 ft., 2; Sierra de Tamaulipas, 3 mi. S, 14 mi. W Piedra, 1400 ft., 1; Sierra de Tamaulipas, 3 mi. S, 10 mi. W Piedra, 1400 ft., 1; Rancho Santa Rosa, 25 km. N, 13 km. W Cd. Victoria, 260 m., 1.

Additional records: Cueva de Los Troncones, 7.5 km. NNW, 3.5 km. S Cd. Victoria (Villa and Jimenez, 1961:503); Cueva de Quintero, 15 km. SSW Cd. Mante (*ibid*); Tampico (Davis and Carter, 1962:67).

Micronycteris megalotis mexicana Miller

Brazilian Small-eared Bat

1898. *Micronycteris megalotis mexicana* Miller, Proc. Acad. Nat. Sci. Philadelphia, 50:329, August 2, type from Platanar, Jalisco.

Distribution in Tamaulipas.—Known only from Rancho Pano Ayuctle (Goodwin, 1954:4). The single specimen of this species presently known from Tamaulipas was shot while it was roosting in a ranch house.

Glossophaga soricina leachii (Gray)

Pallas' Long-tongued Bat

1844. *Monophyllus leachii* Gray, *in* The zoology of the voyage of H. M. S. Sulphur . . ., 1 (1, Mamm.): 18, April, type from Realego, Chinandega, Nicaragua.

1913. *Glossophaga soricina leachii,* Miller, Proc. U. S. Nat. Mus., 46:419, December 31.

Distribution in Tamaulipas.—Tropical region of southern part of state.

Specimens from the Sierra de Tamaulipas were taken in a cave along with *Desmodus rotundus* and *Tadarida laticaudata.* Specimens from 20 miles north of El Mante were collected from a cave about 50 yards deep. Weights of two females from the Sierra de Tamaulipas were 9 and 12 grams. Tamaulipan specimens examined do not differ from specimens from Nicaragua that were used in comparison.

Records of occurrence.—Specimens examined, 6: Sierra de Tamaulipas, 3 mi. S, 16 mi. W Piedra, 1400 ft., 2; 10 km. N, 8 km. W El Encino, 400 ft., 1; Ojo de Agua, 20 mi. N El Mante, and 3 km. W Highway, 300 ft., 2; 8 km. NE Antiguo Morelos, 500 ft., 1.

Additional records: 5 mi. NE Antiguo Morelos, near El Pachón (de la Torre, 1954:114); Altamira (Miller, 1913:420).

Leptonycteris nivalis nivalis (Saussure)
Long-nosed Bat

1860. *M.* [= *Ischnoglossa*] *nivalis* Saussure, Revue et Mag. Zool., Paris, ser. 2, 12:492, November, type from near snow line of Mt. Orizaba, Veracruz.

1900. *Leptonycteris nivalis*, Miller, Proc. Biol. Soc. Washington, 13:126, April 6.

Distribution in Tamaulipas.—Probably throughout southern part of state, but presently known only from one locality.

The specimens herein reported were taken in a cave. They provide the first record of the species from Tamaulipas and are assigned to the subspecies *nivalis* on the basis of their brownish color and small size in comparison with specimens of *L. n. longala* from Coahuila (see also description and measurements of *longala* given by Stains, 1957:356). None of the specimens suggests intergradation in color between *nivalis* and *longala*, but some are slightly larger than specimens of the former from Veracruz.

Twelve females taken on August 27, 1961, were pregnant. Each carried a single embryo, the embryos averaging 15.7 (12-20) mm. in crown-rump length. The average weight of the 12 females was 26.9 (24.5-30.0) grams; 10 males weighed an average of 24.6 (21-28) grams.

Measurements.—Average and extremes of ten specimens (5 males and 5 females) are as follows: 78.2 (76-80); 0.0; 16.4 (15-17); 16.7 (16-19); length of forearm, 48.4 (45.2-54.3); length of third finger, 100.8 (99.2-103.7); greatest length of skull, 26.8 (25.9-27.6); zygomatic breadth (6 only), 10.9 (10.7-11.1); least interorbital constriction, 4.6 (4.5-4.9); mastoid breadth, 10.8 (10.5-11.2); length of maxillary tooth-row, 8.7 (8.4-9.0).

Records of occurrence.—Specimens examined, 28: all from 6.5 mi. N, 13 mi. W Jimenez, 1250 ft.

Sturnira lilium parvidens Goldman
Yellow-shouldered Bat

1917. *Sturnira lilium parvidens* Goldman, Proc. Biol. Soc. Washington, 30:116, May 23, type from Papayo, about 25 mi. NW Acapulco, Guerrero.

Distribution in Tamaulipas.—Known presently only from Rancho Pano Ayuctle.

The two specimens from Tamaulipas were reported by de la Torre (1954:114) and in eastern México are the northernmost yet reported of the genus.

Artibeus jamaicensis jamaicensis Leach

Jamaican Fruit-eating Bat

1821. *Artibeus Jamaicensis* Leach, Trans. Linn. Soc. London, 13:75, type from Jamaica.

Distribution in Tamaulipas.—Tropical region of southern part of state.

The specimens from northwest of El Encino were shot deep (250 yards) in a cave; specimens of *Myotis nigricans* were obtained in the same cave. A female taken on May 24 carried a single embryo that was 43 mm. in crown-rump length. Six March-taken females reported by de la Torre (1954:114) had one embryo each that varied from 20 to 38 mm. in length.

Artibeus jamaicensis and *A. lituratus* are the largest bats known from Tamaulipas. In addition to the differences between the two species pointed out by Lukens and Davis (1957:9), I note, in Tamaulipas at least, that the postorbital constriction is narrower in relation to the condylobasal length in *lituratus,* 24.6 (23.7-26.0) per cent as compared to 27.9 (26.7-29.9) per cent in *jamaicensis.*

Records of occurrence.—Specimens examined, 19: 10 km. N, 8 km. W El Encino, 400 ft., 10; Aserradero del Paraiso, 19 km. N Chamal (by road), 8 (AMNH); Cueva El Pachón, 5 mi. N Antiguo Morelos, 1 (AMNH).

Additional records: Rancho Pano Ayuctle (de la Torre, 1954:114); 4 mi. N Antiguo Morelos, near El Pachón (*ibid.*).

Artibeus lituratus palmarum J. A. Allen and Chapman

Big Fruit-eating Bat

1897. *Artibeus palmarum* J. A. Allen and Chapman, Bull. Amer. Mus. Nat. Hist., 9:16, February 26, type from Botanical Gardens at Port of Spain, Trinidad.

1949. *A[rtibeus]. l[ituratus]. palmarum,* Hershkovitz, Proc. U. S. Nat. Mus., 99:447, May 10.

Distribution in Tamaulipas.—Tropical region in southern part of state.

Two specimens from the Río Sabinas were taken in a mist net placed across the small, crevicelike entrance to a cave. Ten pregnant females taken in late May each contained a single embryo; average crown-rump length of the 10 embyos was 43 (35-55) mm.

Tamaulipan specimens of *lituratus* do not differ appreciably in color from topotypes except that the facial stripes are narrow and, in three individuals, poorly marked. Lukens and Davis (1957:9) reported that females from Guerrero were paler than the males, but the male examined in this study does not differ in color from the females seen.

Records of occurrence.—Specimens examined, 15: Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft., 13; cave at headwaters of Río Sabinas, 10 km. N, 8 km. W El Encino, 400 ft., 2.

Artibeus toltecus (Saussure)

Toltec Fruit-eating Bat

1860. *Stenoderma toltecus* Saussure, Revue et Mag. Zool., Paris, ser. 2, 12:427, October, type from México. Type locality restricted to Mirador, Veracruz, by Hershkovitz, Proc. U. S. Nat. Mus., 99:449, May 10, 1949.

1908. *Artibeus toltecus*, Andersen, Proc. Zool. Soc. London, p. 296, April 7.

Distribution in Tamaulipas.—Probably lowlands of southern part of state; known presently only from Rancho Pano Ayuctle.

Artibeus toltecus is closely related to another species, *A. aztecus*, that occurs also in Tamaulipas. Externally, *toltecus* differs from *aztecus* in being smaller and darker; cranially, *toltecus* also is the smaller and the P2 and M2 are more angular lingually than in *aztecus*, in which the teeth are rounded. One of the most important differences between these two species is that they occur at different altitudes. Davis (1958:165) reported that *toltecus* occurred at elevations below 5000 feet at more southerly localities in México, whereas *aztecus* occurred above 5000 feet. In Tamaulipas the two species probably have parallel distributions from south to north but *A. toltecus* is known from Rancho Pano Ayuctle at an elevation of 300 feet in rain forest, whereas *A. aztecus* is known from Rancho del Cielo at an elevation of 3300 feet in cloud forest. The two localities are only four miles apart.

One of the specimens examined (GMS 10640) is smaller, cranially and externally (see beyond), than any recorded by Davis (1958: 165).

Measurements.—Some external and cranial measurements of two females and a male (GMS 10668, 10646 and 10640) are, respectively, as follows: length of hind foot, 12.5, 12.0, 11.0; length of ear from notch, 15, 17, 15; length of forearm, 40.5, 40.0, 36.5; greatest length of skull, 20.9, 20.7, 19.7; zygomatic breadth, 12.3, 12.3, 11.7; least interorbital constriction, 5.2, 5.0, 5.0; length of maxillary tooth-row, 6.8, 6.8, 6.5; breadth of braincase, 9.3, 9.2, 9.1.

Records of occurrence.—Specimens examined, 3 from Río Sabinas, near Gómez Farías (Rancho Pano Ayuctle) (GMS).

Artibeus aztecus Andersen

Aztec Fruit-eating Bat

1906. *Artibeus aztecus* Andersen, Ann. Mag. Nat. Hist., ser. 7, 18:422, December, type from Tetela del Volcán, Morelos.

Distribution in Tamaulipas.—Probably higher areas of southern part of state; known presently only from Rancho del Cielo.

I follow Davis (1958:165) in treating *A. aztecus* and *A. toltecus* as distinct species. Differences between the two are discussed in the preceding account of *toltecus*.

One specimen examined (AMNH 146980) is distinctly larger than

the others here assigned to *A. aztecus*, but does not exceed the maximal measurements given by Davis (*loc. cit.*) for the species. This specimen also has a narrower M2, and relatively and actually narrower braincase than other specimens (see measurements).

Specimens from Rancho del Cielo were collected in a limestone cave in the cloud forest. A female taken on July 2 carried a small embryo and another obtained on August 14 had an embryo that appeared to be nearly ready for birth.

Measurements.—Respective external and cranial measurements of three males (AMNH, uncatalogued) and a female (AMNH 146980) are as follows: total length, 58, 65, 66, 73; length of hind foot, 13, 12, 12, 13; length of forearm, —, 43, 40, 41; greatest length of skull, 21.6, 22.4, 21.5, 23.0; zygomatic breadth, 13.0, 12.8, 13.0, 12.4; least interorbital constriction, 5.2, 5.7, 5.5, 6.0; length of maxillary tooth-row, 7.0, 7.1, 6.9, 7.1; breadth of braincase, 10.0, 9.8, 10.0, 9.5.

Records of occurrence.—Specimens examined, 7, all from Rancho del Cielo, 3300 ft., (AMNH).

Enchistenes hartii (Thomas)

Little Fruit-eating Bat

1892. *Artibeus hartii* Thomas, Ann. Mag. Nat. Hist., ser. 6, 10:409, November, type from Trinidad, Lesser Antilles.

1908. *Enchistenes hartii*, Andersen, Proc. Zool. Soc. London, 2:224, September 7.

Distribution in Tamaulipas.—Known only from Aserradero del Infernillo.

Enchistenes hartii is known from Tamaulipas only by the cranium reported by Goodwin (1954:5), and this is the northernmost known occurrence. The bat has not been reported from any other Mexican state bordering on the Gulf of Mexico.

Centurio senex Gray

Wrinkle-faced Bat

1842. *Centurio senex* Gray, Ann. Mag. Nat. Hist., ser. 10, 10:259, December, type locality erroneously given as Amboyna, East Indies; subsequently restricted to Realejo, Chinandega, Nicaragua, by Goodwin (Bull. Amer. Mus. Nat. Hist., 87:327, December 31, 1946).

Distribution in Tamaulipas.—Tropical areas of southern part of state.

The single specimen examined, a female weighing 23 grams that carried an embryo (17 mm. crown-rump length), was taken on June 14 in a mist net stretched between oak trees in the Sierra de Tamaulipas. One other female and one cranium have been reported from Tamaulipas.

The specimen examined differs from two seen from southern México (5 mi. SW Teapa, Tabasco, and 2 mi. S Tollosa, Oaxaca) in being brownish instead of grayish, but resembles in color two specimens from Cozumel Island, Quintana Roo.

Measurements.—A female from the Sierra de Tamaulipas affords the following measurements: Total length, 67; length of hind foot, 13; length of ear from notch, 15; length of forearm, 43.1; condylobasal length, 15.0; zygomatic breadth, 5.1; palatal length, 4.1; least interorbital constriction, 5.3; length of maxillary tooth-row, 5.1.

Records of occurrence.—Specimen examined, one from the Sierra de Tamaulipas, 3 mi. S, 14 mi. W Piedra, 1300 ft.

Additional records: Rancho Pano Ayuctle (de la Torre, 1954:114); Aserradero del Infernillo (Goodwin, 1954:5).

Desmodus rotundus murinus Wagner

Vampire

1840. *D[esmodus]. murinus* Wagner, *in* Schreber, Die Säugthiere . . ., Suppl., 1:337, type from México.

1912. *Desmodus rotundus murinus*, Osgood, Field Mus. Nat. Hist., Publ. 155, Zool. Ser., 10:63, January.

Distribution in Tamaulipas.—Southern part of state, north at least to vicinity of Jiménez.

Hall and Kelson (1959:151) listed a place 12 kilometers west and 8 kilometers north of Ciudad Victoria as the northernmost locality of record for *Desmodus*, but three specimens from Cueva La Esperanza, 6 kilometers southwest of Rancho Santa Rosa, are from a site slightly to the northwestward (12 mi.) of the locality first mentioned and a specimen from 13 miles west and six and a half miles north of Jiménez represents the northeasternmost known occurrence of *Desmodus* in eastern México.

Most of the vampires examined in this study were taken in caves; those from four miles southwest of Padilla were obtained from a hollow tree. Nine specimens were collected in a small cave 70 kilometers south of Ciudad Victoria on January 18, when water on the floor of the cave was frozen; the bats were congregated on the ceiling at a height of 20 feet. In a cave in the Sierra de Tamaulipas, 16 miles west and three miles south of Piedra, females and young were found some 50 yards from the entrance; *Natalus stramineus* and *Glossophaga soricina* were obtained from the same cave. In another cave only half a kilometer distant, 12 males were collected. In Cueva La Mula, *Desmodus* was found near the mouth, whereas *Choeronycteris mexicana* and two *Tadarida brasiliensis* were collected in the deepest part. At Cueva La Esperanza, 300 feet deep and on the east side of the Sierra Madre Oriental, four different congregations of vampires were found along with about 400 *Natalus*. A male *Desmodus* obtained in a cave 13 miles west and six and a half miles north of Jiménez also was associated with *Natalus*.

Females with embryos or in lactation were collected as follows:

Rancho Pano Ayuctle, March 10, one pregnant female (embryo 40 mm. in crown-rump length); Río Sabinas, May 23, two pregnant females (embryos 36 and 43 mm.); Sierra de Tamaulipas, June 13, five lactating females and one female taken alive that gave birth on June 16 to one young; Cueva La Mula, August, nine lactating females. A male from the Sierra Madre that was obtained on January 5 had testes 8 mm. long.

The average weight of 21 adults from four miles southwest of Padilla was 39.1 (32.0-44.5) grams.

Records of occurrence.—Specimens examined, 107: 3 mi. W, 6.5 mi. N Jiménez, 1250 ft., 1; Río Soto la Marina, 4 mi. SW Padilla, 800 ft., 23; Cueva La Esperanza, 6 km. SW Rancho Santa Rosa, 360 m., 3; Cueva Los Troncones, 8 km. N, 12 km. W Cd. Victoria, Sierra Madre Oriental, 2500 ft., 2; Cd. Victoria, 1; Sierra Madre Oriental, 1900 ft., 5 mi. S, 3 mi. W Cd. Victoria, 3; La Mula, 13 mi. N Jaumave, 19; Cueva La Mula, 10 km. W Joya Verde, 2400 ft., 16; Joya Verde, 35 km. SW [Cd.] Victoria, 3800 ft., 6; Sierra de Tamaulipas, 1400 ft., 3 mi. S, 16 mi. W Piedra, 10; 70 km. S Cd. Victoria (*via* Highway), 6 km. W of Highway, 5; Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft., 7; cave near headwaters Río Sabinas, 10 km. N, 8 km. W El Encino, 400 ft., 11.

Additional records (Malaga and Villa, 1957:539): Cueva La Sepultura, 7.5 km. NNW and hence 7 km. SSW (*via* highway) Cd. Victoria; El Ojo de Agua, at km. 10 on Valles-Tampico highway; Cueva del Abra, 2 km. SSW Cd. Mante.

Diphylla ecaudata Spix

Hairy-legged Vampire

1823. *Diphylla ecaudata* Spix, Simiarum et vespertilionum Brasiliensium . . ., p. 68, type locality, Brazil, restricted to Rio San Francisco, Baía, by Cabrera (Rev. Mus. Argentino Cien. Nat., 4:94, March 27, 1958).

Distribution in Tamaulipas.—Southern and central parts of state.

The hairy-legged vampire was first reported from Tamaulipas by de la Torre (1954:114), who recorded a male from five miles northeast of Antiguo Morelos, near El Pachón. Later in the same year Martin and Martin (1954:585) listed another male from El Pachón. Subsequently, Malaga and Villa (1957:543) reported specimens from two additional localities in the state, one of which (Cueva de la Sepultura) provides the northernmost place from which the species has been recorded. Malaga and Villa remarked that the species was abundant at Cueva de la Sepultura, being found in small groups clinging to the roof of the cave. Two females taken there on November 11 carried one embryo each; a lactating female was taken on November 14. The vampire, *Desmodus rotundus,* also was taken at Cueva de la Sepultura.

I follow Burt and Stirton (1961:37) in treating *Diphylla ecaudata* as a monotypic species.

Records: Cueva de la Sepultura, 7.5 km. NNW and hence 7 km. SSW (*via* highway) Cd. Victoria (Malaga and Villa, 1957:543); 5 mi. NE Antiguo

Morelos, near El Pachón (de la Torre, 1954:114); El Pachón (Martin and Martin, 1954:585); Cueva de Quintero, 4 km. SSW Quintero (Malaga and Villa, 1957:543).

Natalus stramineus saturatus Dalquest and Hall

Mexican Funnel-eared Bat

1949. *Natalus mexicanus saturatus* Dalquest and Hall, Proc. Biol. Soc. Washington, 62:153, August 23, type from 3 km. E San Andrés Tuxtla, 1000 ft., Veracruz.

1959. *Natalus stramineus saturatus*, Goodwin, Amer. Mus. Novit., 1977:7, December 22.

Distribution in Tamaulipas.—Central and southwestern parts of state.

All specimens examined were obtained from caves. At Cueva la Esperanza, approximately 400 individuals were found along with individuals of *Desmodus rotundus; Natalus* and *Desmodus* also were collected together in a cave approximately 30 yards deep three miles south and 14 miles west of Piedra, and in a cave six and a half miles north and 13 miles west of Jiménez, the northernmost locality from which *N. stramineus* is presently known.

Tamaulipan specimens do not differ significantly in external or cranial measurements in comparison with the specimens from Veracruz reported by Dalquest and Hall (1949:154), but do differ in color. Most are in the gray phase and are Avellaneus (grayish with yellowish hairs mixed) instead of Clay Color as are specimens from Veracruz; those few in the red phase are between Clay Color and Tawny-Olive instead of between Burnt Sienna and Chestnut. By consequence, bats from Tamaulipas resemble in color the smaller *N. s. mexicanus* of western México to a greater degree than they resemble *N. s. saturatus*, but I follow Goodwin (1959:7).

Dalquest and Hall (1949:154) reported the specimen from eight kilometers northeast of Antiguo Morelos as from San Luis Potosí, from which state the collector (Dalquest) evidently thought it had originated. Actually the place eight kilometers northeast of Antiguo Morelos is in Tamaulipas.

Records of occurrence.—Specimens examined, 64: 6.5 mi. N, 13 mi. W Jiménez, 1250 ft., 14; Cueva de la Esperanza, 6 km. SW Rancho Santa Rosa, 360 m., 20; Sierra de Tamaulipas, 3 mi. S, 16 mi. W Piedra, 1400 ft., 7; 3 mi. S, 14 mi. W Piedra, 2; Ejido Ojo de Agua, 20 mi. N, 3 km. W El Mante, 300 ft., 20; 8 km. NE Antiguo Morelos, 500 ft., 1.

Additional records (Goodwin, 1959:8): Antiguo Morelos; El Pachón.

Myotis velifer incautus (J. A. Allen)

Cave Myotis

1896. *Vespertilio incautus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 8:239, November 21, type from San Antonio, Bexar Co., Texas.

1928. *Myotis velifer incautus*, Miller and Allen, Bull. U. S. Nat. Mus., 144:92, May 25.

Distribution in Tamaulipas.—Probably most of northern part of state; presently known only from three localities.

The two specimens examined from the Sierra de Tamaulipas were taken in a mist net in which *Eptesicus fuscus, Myotis keenii,* and *Tadarida brasiliensis* also were captured. Both are females, one of which was lactating (June 20). Specimens from San Fernando probably were taken in houses by natives, who brought the bats to the collectors (Clifton and Bodley). The maxillary tooth-row and tibia are shorter, breadth across M3 narrower, and ear slightly longer in Tamaulipan specimens than in those for which measurements were given by Miller and Allen (1928:95), but the Tamaulipan specimens do not differ otherwise. The color in general is slightly more brownish than in Texan *incautus,* but about as in Oklahoman specimens examined. Three from San Fernando, Tamaulipas, are darker than others from that state.

The average weight of 12 non-pregnant females from San Fernando was 11.0 (9.5-13) grams. The only male obtained at the same locality weighed 12 grams.

Measurements.—Six females from San Fernando afford the following measurements: 100.0 (95-107); 42.5 (38-46); 10.3 (10-11); 15.3 (14.5-16); length of tibia, 17.4 (16.5-18.9); length of forearm, 44.8 (43.4-45.7); greatest length of skull, 16.5 (16.1-16.9); condylobasal length, 15.6 (15.3-15.8); least interorbital constriction, 4.0 (3.9-4.1); mastoid breadth, 8.3 (8.1-8.6); length of maxillary tooth-row, 6.5 (6.3-6.7); breadth across M3, 6.5 (6.0-6.9).

Records of occurrence.—Specimens examined, 15: San Fernando, 180 ft., 13; Sierra de Tamaulipas, 10 mi. W, 2 mi. S Piedra, 1200 ft., 2.

Additional record: Soto la Marina (Miller and Allen, 1928:93).

Myotis keenii auriculus Baker and Stains
Keen's Myotis

1955. *Myotis evotis auriculus* Baker and Stains, Univ. Kansas Publ., Mus. Nat. Hist., 9:83, December 10, type from 10 m. W, 2 mi. S Piedra, 1200 ft., Sierra de Tamaulipas, Tamaulipas.

1960. *Myotis keenii auriculus,* Findley, Jour. Mamm., 41:18, February.

Distribution in Tamaulipas.—Known only from type locality (2 specimens), but probably widely distributed in western part of state.

The two specimens known from Tamaulipas were caught in a mist net stretched across a narrow, brush-bordered arroyo in the Sierra de Tamaulipas. I tentatively follow Findley (1960) in arranging *auriculus* as a subspecies of *M. keenii.*

Records of occurrence.—Specimens examined, the holotype and one topotype.

Myotis californicus mexicanus (Saussure)
California Myotis

1890. *V[espertilio]. mexicanus* Saussure, Revue et Mag. Zool., Paris, ser. 2, 12:282, July, type from an unknown locality, but Dalquest (Louisiana State Univ. Studies, Biol. Ser., 1:49, December 28, 1953) restricted

the type locality to the "desert (warmer part) of the state of México, México."

1897. *Myotis californicus mexicanus*, Miller, N. Amer. Fauna, 13:73, October 16.

Distribution in Tamaulipas.—Western mountains of state in pine-oak forest.

Only ten specimens of this species, five from Nicolás, two from Miquihuana and the other three, each from a different locality, have been reported from Tamaulipas. The specimen examined from 14 miles north and six miles west of Palmillas, a young female that still has deciduous incisors, was obtained on July 24. Of the five specimens from Nicolás, which represent the largest series of *M. californicus* ever reported from eastern México, some were caught in mist nets and others were shot over a water-hole.

Measurements.—Five skins and four skulls from Nicolás afford the following measurements: 86.0 (80-94); 39.0 (36-41); 7.4 (7-8.5); 13.7 (13.5-14.0); length of forearm, 33.0 (31.8-34.2); weight, 3.6 (3-4) grams; greatest length of skull, 13.9 (13.8-14.1); least interorbital constriction, 3.2 (3.1-3.3); breadth of braincase, 6.5 (6.4-6.5); length of maxillary tooth-row, 5.2 (5.1-5.3); breadth across M3, 5.1 (5.0-5.3).

Records of occurrence.—Specimens examined, 6: Nicolás, 56 km. NW Tula, 5500 ft., 5; 14 mi. N, 6 mi. W Palmillas, 5500 ft., 1.

Additional records: San José (Dice, 1937:249); Miquihuana (Miller and Allen, 1928:160); La Joya de Salas (Goodwin, 1954:5).

Myotis nigricans dalquesti Hall and Alvarez

Black Myotis

1961. *Myotis nigricans dalquesti* Hall and Alvarez, Univ. Kansas Publ., Mus. Nat. Hist., 14:71, December 29, type from 3 km. E of San Andrés Tuxtla, 1000 ft., Veracruz.

Distribution in Tamaulipas.—Tropical part of state, presently known only from two localities.

For taxonomic remarks concerning this bat see Hall and Alvarez (1961:72).

Records of occurrence.—Specimens examined, 5, from 8 km. W, 10 km. N El Encino, 400 ft.

Additional record: Cave in canyon of Río Boquillas, 8 km. SW Chamal (Goodwin, 1954:6).

Pipistrellus subflavus subflavus (F. Cuvier)

Eastern Pipistrelle

1832. *V[espertilio]. subflavus* F. Cuvier, Nouv. Ann. Mus. Hist. Nat. Paris, 1:17, type locality restricted to 3 mi. SW Riceboro, Liberty Co., Georgia, by W. H. Davis, Jour. Mamm., 40:522, November 20, 1959.

1897. *Pipistrellus subflavus*, Miller, N. Amer. Fauna, 13:90, October 16.

Distribution in Tamaulipas.—Presently known only from three localities, but probably occurs in most of eastern part of state.

Specimens examined are intermediate in color and measurements between *Pipistrellus subflavus subflavus* and *P. s. veraecrusis*, but

the color resembles that of individuals of *subflavus* from Kansas more than that of specimens of *veraecrusis* from Las Vigas, Veracruz.

The two males from eight kilometers west and 10 kilometers north of El Encino represent the southernmost record of the subspecies.

Measurements.—External measurements of two males (58849, 58848) from 8 km. west and 10 km. north of El Encino and a male (60296) from Rancho Pano Ayuctle are, respectively, as follows: 78, 81, 83; 36, 38, 36; 10, 10, 9; 11, 11, 11; length of forearm, 33.1, 32.0, —; length of tibia, 14.6, 13.4, 13.0. Some cranial measurements of the two specimens from northwest of El Encino are: greatest length of skull, 12.8, 12.9; breadth of braincase, 6.5, 6.5; length of maxillary tooth-row, 4.0, 4.1.

Records of occurrence.—Specimens examined, 3: 8 km. W, 10 km. N El Encino, 400 ft., 2; Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft., 1.

Additional record: Matamoros (H. Allen, 1894:128).

Pipistrellus hesperus potosinus Dalquest

Western Pipistrelle

1951. *Pipistrellus hesperus potosinus* Dalquest, Proc. Biol. Soc. Washington, 64:105, August 24, type from Presa de Guadalupe, San Luis Potosí.

Distribution in Tamaulipas.—Probably occurs throughout southwest part, but presently known only from Joya Verde.

The specimens reported herein were shot in July in a canyon that contained some standing water. According to the field notes of the collector (Schaldach), individuals of this bat in Tamaulipas flew later, in his experience, than bats of the same species in Sonora, Arizona and Coahuila, not emerging until it was almost fully dark.

Pipistrellus hesperus from Tamaulipas is identified as *P. h. potosinus* owing to the dark color, but the averages of some measurements differ slightly from those given by Dalquest (1951:106) for *potosinus* as follows: tail and ear shorter; foot larger; condylobasal length and cranial breadth less.

Measurements.—Average and extreme external and cranial measurements of five males from Joya Verde are: 73.2 (70-75); 27 (26-28); 7 (7); 12.4 (12-13); length of forearm, 31.0 (29.5-31.5); greatest length of skull, 12.4 (12.2-12.8); condylobasal length, 11.8 (11.4-12.3); breadth of braincase, 6.3 (6.0-6.5). Corresponding measurements of three females (60204, 60209, 60210) from the same locality are: 72, 78, 76; 27, 33, 35; 7, 7, 7; 12, 12, 12; 31, 31, 32; 12.3, 12.9, 13.5; 11.7, 12.2, —; 6.0, 6.6, 6.1.

Records of occurrence.—Specimens examined, 8, from Joya Verde, 35 km. SW Cd. Victoria, 3800 ft.

Eptesicus fuscus miradorensis (H. Allen)

Big Brown Bat

1866. *S[cotophilus]. miradorensis* H. Allen, Proc. Acad. Nat. Sci. Philadelphia, 18:287, type from Mirador, Veracruz.

1812. *Eptesicus fuscus miradorensis,* Miller, Bull. U. S. Nat. Mus., 79:62, December 31.

Distribution in Tamaulipas.—Southern part of state, north at least to Miquihuana.

Specimens from Miquihuana, Palmillas, and Nicolás were shot in flight at dusk; those from the Sierra de Tamaulipas were collected in a mist net. Five females, all taken in June, were lactating.

Judging from Hall and Kelson's (1959:185) distribution map for the species, two subspecies, *E. f. fuscus* and *E. f. miradorensis*, possibly occur in Tamaulipas, the former in the north and the latter in the south. Comparison of specimens presently available from the state (all from the southern part) with typical individuals of the two subspecies mentioned reveal that they resemble *miradorensis* to a greater degree than *fuscus* and they accordingly are assigned to the former. In measurements, the Tamaulipan specimens agree closely with *miradorensis;* in color, some resemble *miradorensis* but others approach *fuscus*, possibly indicating intergradation between the two subspecies in the material at hand. Probably *E. f. fuscus* will be found in the northern part of the state.

Measurements.—Average and extreme measurements of nine females from the Sierra de Tamaulipas and three males, two from Miquihuana (55137, 55138) and one from Palmillas (55139), are respectively: 121.3 (111-127), 115, 107, 115; 51.9 (50-56), 50, 45, 52; 10.9 (9.5-11.0), 10, 10, 11; 17.8 (17-18), 18, 18, 18; length of forearm, 49.6 (48-52.6), 48.9, 49.1, 49.1; length of tibia, 18.8 (18.2-19.3), 20.5, 17.3, 18.0; condylobasal length, 18.9 (18.5-19.3), 19.3, —, 18.8; zygomatic breadth, 13.1 (12.7-13.5), —, 13.0, 13.3; interorbital constriction, 4.2 (3.7-4.4), 4.0, 4.3, 4.1; length of maxillary tooth-row, 7.3 (7.1-7.5), —, 7.2, 7.2. Five lactating females weighed 20 (17-23) grams, and three males 17.5 (17-8) grams.

Records of occurrence.—Specimens examined, 17: Miquihuana, 6200 ft., 2; 14 mi. N, 6 mi. W Palmillas, 5500 ft., 1; Nicolás, 56 km. NW Tula, 5500 ft., 1; Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra, 1200 ft., 12; Joya Verde, 35 km. SW [Cd.] Victoria, 3800 ft., 1.

Additional record: Aserradero del Paraiso (Goodwin, 1954:186).

Lasiurus borealis

Red Bat

Two subspecies of *Lasiurus borealis* have been reported from Tamaulipas. One, *L. b. borealis*, is known only from Matamoros, whereas the other, *L. b. teliotis*, is widely distributed in the central and southern parts.

A young animal from Ciudad Victoria was captured inside a house. All specimens taken in the Sierra de Tamaulipas were caught in mist nets, in which *Centurio senex, Pteronotus parnelli,* and *Mormoops megalophyla* also were taken.

Lasiurus borealis borealis (Müller)

1776. *Vespertilio borealis* Müller, Des Ritters Carl von Linné . . . vollständiges Natursystem . . ., Suppl., p. 20, type from New York.

1897. *Lasiurus borealis,* Miller, N. Amer. Fauna, 13:105, October 16.

Distribution in Tamaulipas.—Known only by two specimens from Matamoros (Miller, 1897:108).

Lasiurus borealis teliotis (H. Allen)

1891. *Atalapha teliotis* H. Allen, Proc. Amer. Philos. Soc., 29:5, April 10, type from an unknown locality, probably some part of California.

1897. *Lasiurus borealis teliotis*, Miller, N. Amer. Fauna, 13:110, October 16.

Distribution in Tamaulipas.—Generally distributed in higher parts of state.

Eight June-taken females, all lactating, from the Sierra de Tamaulipas averaged 10.0 (8-12) grams; five males from there weighed 9.2 (8-10) grams. According to Hall and Kelson (1959:188), males of this species usually are more brightly colored than females but this phenomenon is not evident in the Tamaulipan specimens. Males do, however, average slightly smaller than females.

The name *Lasiurus borealis teliotis* is employed following Handley (1960:472); formerly *L. b. ornatus* Hall was applied (Hall and Kelson, 1959:190) to bats here referred to as *teliotis*.

Records of occurrence.—Specimens examined, 7: Cd. Victoria, 1800 ft., 1; Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra, 1200 ft., 1; Sierra de Tamaulipas, 3 mi. S, 14 mi. W Piedra, 1200 ft., 1; Sierra de Tamaulipas, 3 mi. S, 16 mi. W Piedra, 1400 ft., 4.

Lasiurus cinereus cinereus (Palisot de Beauvois)

Hoary Bat

1776. *Vespertilio cinereus* (misspelled *linereus*) Palisot de Beauvois, Catalogue raisonné du muséum de Mr. C. W. Peale, Philadelphia, p. 18, type from Philadelphia, Pennsylvania.

1864. *Lasiurus cinereus* H. Allen, Smiths. Misc. Coll., 7 (publ. 165): 21, June.

Distribution in Tamaulipas.—Probably state-wide but so far reported only from Matamoros (Miller, 1897:114), and Aserradero del Infernillo (Goodwin, 1954:6—cranium only).

Lasiurus intermedius intermedius H. Allen

Northern Yellow Bat

1862. *Lasiurus intermedius* H. Allen, Proc. Acad. Nat. Sci. Philadelphia, 14:246, "April" (between May 27 and August 1), type from Matamoros, Tamaulipas.

Distribution in Tamaulipas.—Eastern half of state, known only from three localities.

The three specimens examined were taken in mist nets along with *Lasiurus ega, Pteronotus rubiginosus* and *Mormoops megalophylla.*

The generic name *Lasiurus* is used instead of *Dasypterus* following Hall and Jones (1961).

Records of occurrence.—Specimens examined, 3: Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra, 1200 ft., 1; Sierra de Tamaulipas, 3 mi. S, 16 mi. W Piedra, 1400 ft., 2.

Additional record: Matamoros (H. Allen, 1862:246).

Lasiurus ega xanthinus (Thomas)

Southern Yellow Bat

1897. *Dasypterus ega xanthinus* Thomas, Ann. Mag. Nat. Hist., ser. 6, 20:544, December, type from Sierra Laguna, Baja California.

1953. *Lasiurus ega xanthinus*, Dalquest, Louisiana State Univ. Studies, Biol. Ser., 1:61, December 28.

Distribution in Tamaulipas.—Probably occurs in southern and western parts of state; certainly known only from the Sierra de Tamaulipas.

Three June-taken females, all captured in mist nets, were lactating.

Hall and Jones (1961:91) assigned all Mexican specimens of the southern yellow bat to *Lasiurus ega xanthinus*, but remarked that specimens from western México were paler than those from the east. Of the six specimens examined from Tamaulipas, four are dark, resembling in color specimens from Veracruz, Yucatán and Costa Rica, and the other two are somewhat paler, approaching specimens from Baja California, Zacatecas and Coahuila. In measurements, Tamaulipan specimens of *Lasiurus ega* generally resemble specimens from the west, but differ from any other *L. ega* seen in having a longer tail, longer ear, and shorter maxillary tooth-row.

Records of occurrence.—Specimens examined, 6: Sierra de Tamaulipas, 10 mi. W, 2 mi. S Piedra, 1200 ft., 4; 10 mi. W, 3 mi. S. Piedra, 1200 ft., 1; 16 mi. W, 3 mi. S. Piedra, 1400 ft., 1.

Nycticeius humeralis

Evening Bat

Nycticeius humeralis has the same distributional pattern in Tamaulipas as has *Lasiurus borealis* in that both are represented there by two subspecies, one known only from Matamoros and the other occurring in the rest of the state. Bats of this species (*N. h. mexicanus*) from Ciudad Victoria and some from the Sierra de Tamaulipas were shot in flight in evening; others from the last-mentioned locality were taken in mist nets. Lactating females (22 specimens) were collected in June and July.

Nycticeius humeralis humeralis (Rafinesque)

1818. *Vespertilio humeralis* Rafinesque, Amer. Monthly Mag., 3(6):445, October, type from Kentucky.

1819. *N[ycticeius]. humeralis* Rafinesque, Jour. Phys. Chim. Hist. Nat. et Arts, Paris, 88:417, June.

Distribution in Tamaulipas.—Matamoros (Miller, 1897:120), one specimen.

Nycticeius humeralis mexicanus Davis

1944. *Nycticeius humeralis mexicanus* Davis, Jour. Mamm., 25:380, December 12, type from Río Ramos, 1000 ft., 20 km. NW Montemorelos, Nuevo León.

Distribution in Tamaulipas.—Known certainly only from central part, but probably occurs at suitable places in all but extreme northern Tamaulipas.

Twenty-seven of 37 adults of *N. humeralis* examined from Tamaulipas are pale as is *N. h. mexicanus*, but 10 are darker and approach *N. h. humeralis* in this respect. Twenty-two females averaged 10.3 (9-13) grams and eight males averaged 9.5 (8-11) grams in weight.

Records of occurrence.—Specimens examined, 45: Cd. Victoria, 10; Sierra de Tamaulipas, 2-3 mi. S, 10 mi. W Piedra, 1200 ft., 31; 3 mi. S, 16 mi. W Piedra, 1400 ft., 4.

Rhogeëssa tumida tumida H. Allen

Little Yellow Bat

1866. *R[hogeëssa]. tumida* H. Allen, Proc. Acad. Nat. Sci. Philadelphia, 18:286, type from Mirador, Veracruz.

Distribution in Tamaulipas.—Southeastern part of state.

Specimens obtained from the vicinity of La Pesca were shot as were some from the Sierra de Tamaulipas. Others from the Sierra de Tamaulipas were taken in mist nets that were stretched across a small pool in an arroyo; *Eptesicus fuscus, Myotis velifer, M. keenii* and *Nycticeus humeralis* were captured in the same nets.

Females evidently bear young in Tamaulipas in April and May. Fourteen of 15 females collected at La Pesca in May were lactating, as were five of 31 taken in the Sierra de Tamaulipas in June. The weight of 46 females averaged 5.5 (4-7) grams, and that of nine males, 4.5 (4-5) grams.

Comparison of specimens from Tamaulipas with individuals from Veracruz reveals little difference in general color between the two samples. Most Tamaulipan specimens examined are dull yellowish brown, but some are darker. Goodwin (1954:6) reported a specimen from Santa María as being dark brown. Measurements of 10 females (see below) from the Sierra de Tamaulipas average a little larger than those reported by Miller (1897:123-124), Hall (1952: 232), and Goodwin (1958:10-12). I follow the last author in using the specific name *R. tumida* for this bat.

Measurements.—Average and extreme measurements of 10 females from the Sierra de Tamaulipas are as follows: 80.1 (78-83); 35.5 (33-37); 7.9 (7.5-8.0); 13.1 (13-14); length of forearm, 31.9 (30.6-33.0); greatest length of skull, 13.4 (13.1-13.8); zygomatic breadth, 8.6 (8.2-8.8); mastoid breadth, 5.6 (5.3-5.8); breadth across M3, 5.7 (5.5-6.0); length of maxillary tooth-row, 4.8 (4.7-4.9).

Records of occurrence.—Specimens examined, 59: 4 mi. N La Pesca, 1; 3 mi. N La Pesca, 3; 2 mi. N La Pesca, 11; 1 mi. N La Pesca, 4; La Pesca, 1; Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra, 1200 ft., 39.

Additional record: Santa María (Goodwin, 1958:3).

Plecotus phyllotis (G. M. Allen)

Allen's Big-eared Bat

1916. *Corynorhynus phyllotis* G. M. Allen, Bull. Mus. Comp. Zool., 60:352, April, type from San Luis Potosí, probably near city of same name.

1959. *Plecotus phyllotis,* Handley, Proc. U. S. Nat. Mus., 110:130, Sept. 3.

1923. *Idionycteris mexicanus* Anthony, Amer. Mus. Novit., 54:1, January 17, type from Miquihuana, Tamaulipas.

Distribution in Tamaulipas.—Known only from Miquihuana.

The only specimen of this bat known from Tamaulipas was reported by Anthony (1923:1), and formed the basis of his description of *Idionycteris mexicanus,* a synonym of *Plecotus phyllotis* according to Handley (1956:53 and 1959:130).

Antrozous pallidus pallidus (Le Conte)

Pallid Bat

1856. *V[espertilio]. pallidus* Le Conte, Proc. Acad. Nat. Sci. Philadelphia, 7:437, type from El Paso, El Paso Co., Texas.

1864. *Antrozous pallidus,* H. Allen, Smiths. Misc. Coll., 7 (Publ. 165): 68, June.

Distribution in Tamaulipas.—Known only from a single ramus from Aserradero del Infernillo (Goodwin, 1954:6).

Tadarida brasiliensis mexicana (Saussure)

Brazilian Free-tailed Bat

1860. *Molossus mexicanus* Saussure, Revue et Mag. Zool., Paris, ser. 2, 12:283, July, type from Cofre de Perote, 13,000 ft., Veracruz.

1955. *Tadarida brasiliensis mexicana,* Schwartz, Jour. Mamm., 36:108, February 28.

Distribution in Tamaulipas.—Probably state-wide, but presently known from only five localities.

A female taken on June 21 in a mist net on the Sierra de Tamaulipas carried an embryo that was 29 mm. in crown-rump length. Two specimens were shot in flight in the deepest part of Cueva La Mula.

Records of occurrence.—Specimens examined, 4: 8 km. S Cd. Victoria, 1; Sierra de Tamaulipas, 10 mi. W, 2 mi. S Piedra, 1200 ft., 1; Cueva La Mula, 10 km. W Joya Verde, 2400 ft., 2.

Additional records: Río Bravo (town) (Villa, 1956:8); Rancho "La Isla," 3 km. N El Limón (Malaga and Villa, 1957:560); Cueva del Abra (*ibid.*); no specific locality (Shamel, 1931:6).

Tadarida aurispinosa (Peale)

Peale's Free-tailed Bat

1848. *Dysopes aurispinosus* Peale, U. S. Expl. Exp., 8:21, type taken on board the U. S. S. Peacock at sea, approximately 100 mi. S Cape San Roque, Brazil.

1931. *Tadarida aurispinosa,* Shamel, Proc. U. S. Nat. Mus., 78:11, May 6.

Distribution in Tamaulipas.—Known only from Cueva del Abra, six miles north-northeast of Antiguo Morelos.

Carter and Davis (1961) recorded for the first time this species from North America, on the basis of five specimens collected at Cueva del Abra. From the same locality P. L. Clifton collected several owl pellets which provide, besides many skulls of *Tadarida laticaudata,* four crania of *T. aurispinosa.* Available measurements of three, of the four *T. aurispinosa,* resemble those given by Carter and Davis (*op. cit.*) for their specimens. Measurements of the fourth cranium are smaller (greatest length of skull, 19.4; zygomatic breadth, 11.1; interorbital constriction, 3.7; cranial breadth, 9.1; mastoid breadth, 10.7; basal length, 16.3; length of maxillary toothrow, 7.4; breadth across M3, 7.9), but not outside the expected range of individual variation if we can judge by the range recorded by Jones and Alvarez (1962) for the related *Tadarida laticaudata.*

Records of occurrence.—Specimens examined, 4, from [Cueva del Abra], 6 mi. (by road) NNE Antiguo Morelos.

Tadarida laticaudata ferruginea Goodwin

Geoffroy's Free-tailed Bat

1954. *Tadarida laticaudata ferruginea* Goodwin, Amer. Mus. Novit., 1670:2, June 28, type from 8 mi. N Antiguo Morelos, Tamaulipas.

Distribution in Tamaulipas.—Known only from southeastern part of state.

Specimens from three miles south and 16 miles west of Piedra were found in a crevice inside a cave. Two days previously *Desmodus rotundus* and *Natalus stramineus* were obtained from the same cave. All other specimens from the Sierra de Tamaulipas were caught in mist nets. *Nycticeus humeralis, Myotis velifer, Eptesicus fuscus, Lasiurus borealis* and *L. intermedius* were taken in nets that also captured *T. laticaudata.*

All specimens taken (June 19-23) in the Sierra de Tamaulipas were females, except one. Of 33 females taken, 27 carried a single embryo each, the embryos averaging 27.0 (25-28) mm. in crown-rump length; the other five were lactating. Weight of the pregnant females averaged 16.0 (13-18) grams and that of the five lactating individuals averaged 13.0 (12-14) grams. A male weighed 22 grams.

For the taxonomic status of this species in North America see Jones and Alvarez (1962).

Records of occurrence.—Specimens examined, 65: Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra, 1200 ft., 27; Sierra de Tamaulipas, 3 mi. S, 16 mi. W Piedra, 1400 ft., 7; 5 mi. S El Mante, 8 (AMNH); 11 mi. S El Mante, 13 (AMNH); 10 km. NNE Antiguo Morelos, 1; 8 mi. N Antiguo Morelos, 7 (5 AMNH, 2 KU); 20 mi. SW El Mante, 2 (AMNH).

Molossus ater nigricans Miller

Red Mastiff Bat

1902. *Molossus nigricans* Miller, Proc. Acad. Nat. Sci. Philadelphia, 54:395, September 12, type from Acaponeta, Nayarit.

Distribution in Tamaulipas.—Southern part of state, north at least to Guemes.

At Rancho Pano Ayuctle, according to the field notes of the collector (Schaldach), the red mastiff bat was common, and found daytime retreats in hollows in cypress trees. Schaldach twice found groups of bats in such hollows. *M. a. nigricans* is an early forager and most individuals seen were in flight before sunset, usually flying in a more or less straight line at heights of 25 to 60 feet above the ground. The odor of the chest gland was described by Schaldach as "strong" and "geranium-like." A female obtained three miles northeast of Guemes on August 19 carried a single embryo that was 33 mm. in crown-rump length.

Specimens examined average slightly smaller than the type specimen, especially in total length, length of hind foot, length of skull and length of maxillary tooth-row. Davis (1951:219) also noted some of these same differences in a specimen examined by him from two miles south of Ciudad Victoria. The variation in color is great among Tamaulipan specimens. Of the 15 examined, two are Dark Mummy Brown, six are Mummy Brown, six are Sudan Brown, and one is paler than Sudan Brown.

I follow Goodwin (1960:6) in using the specific name *ater*.

Records of occurrence.—Specimens examined, 15: 3 mi. NE Guemes, 2; Rancho Santa Rosa, 25 km. N, 13 km. W Cd. Victoria, 260 m., 2; Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft., 1; Rancho Pano Ayuctle, 25 mi. N El Mante and 3 km. W Pan-American Hwy., 2200 ft., 8; 8 km. W, 10 km. N El Encino, 400 ft., 2.

Additional records (Davis, 1951:219): 2 mi. S Cd. Victoria; Altamira.

Ateles geoffroyi velerosus Gray

Spider Monkeys

1866. *Ateles vellerosus* Gray, Proc. Zool. Soc. London, p. 773 (for 1865), April, type locality "Brasil?"; restricted to Mirador, 2000 ft., about 15 mi. NE Huatusco, Veracruz, by Kellogg and Goldman, Proc. U. S. Nat. Mus., 96:33, November 2, 1944.

1944. *Ateles geoffroyi vellerosus,* Kellogg and Goldman, Proc. U. S. Nat. Mus., 96:32, November 2.

Distribution in Tamaulipas.—Probably extreme southern part.

No specimens of this monkey have been taken in Tamaulipas although Kellogg and Goldman (1944:34) pointed out that it probably occurred in the tropical forest of the southern part of the state. Later, Villa (1958:347) reported that A. Malaga Alba saw monkeys

in 1954 at Barranca de Caballeros, approximately 25 kilometers north-northwest of Ciudad Victoria. No other report of their occurrence in the state has been forthcoming.

Dasypus novemcinctus mexicanus Peters

Nine-banded Armadillo

1864. *Dasypus novemcinctus* var. *mexicanus* Peters, Montsb. preuss Akad. Wiss., Berlin, p. 180, type from Matamoros, Tamaulipas (see Hollister, Jour. Mamm., 6:60, February 9, 1925).

1920. *D[asypus]. novemcinctus mexicanus,* Goldman, Smiths. Misc. Coll., 69 (5):66, April 24.

Distribution in Tamaulipas.—Probably state-wide except on Mexican Plateau; presently known only from five localities.

A 13-pound female from four kilometers west-southwest of La Purisima was captured after it was forced by the collector (Dalquest) and his dog out of the burrow that was under a log. A young specimen examined from seven kilometers southwest of La Purisima was captured by a dog. A partial skeleton including the skull was picked up on the barrier beach at a place 33 miles south of Washington Beach.

Records of occurrence.—Specimens examined, 3 (see text immediately above).

Additional records: Matamoros (Hollister, 1925:60); Rancho del Cielo (Hooper, 1953:11).

Sylvilagus brasiliensis truei (J. A. Allen)

Forest Rabbit

1890. *Lepus truei* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 3:192, December 10, type from Mirador, Veracruz.

1950. *Sylvilagus brasiliensis truei,* Hershkovitz, Proc. U. S. Nat. Mus., 100: 351, May 26.

Distribution in Tamaulipas.—Southern part of state; known only from Rancho del Cielo (Goodwin, 1954:7).

Sylvilagus audubonii parvulus (J. A. Allen)

Desert Cottontail

1904. *Lepus (Sylvilagus) parvulus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 20:34, February 29, type from Apam, Hidalgo.

1909. *Sylvilagus audubonii parvulus,* Nelson, N. Amer. Fauna, 29:236, August 31.

Distribution in Tamaulipas.—Western part of state.

The specimen examined, a male that weighed 646 grams, was shot at night.

This species occurs only in western Tamaulipas. Hall and Kelson (1959:267, map 187) mistakenly plotted El Mulato, as being in the eastern part of the state; actually this locality is in the San Carlos

Mountains of the west, near the boundary between Tamaulipas and Nuevo León.

Records of occurrence.—One specimen examined from 4 mi. SW Nuevo Laredo, 900 ft.

Additional records (Nelson, 1909:237, unless otherwise noted): Nuevo Laredo; Guerrero; Mier; Camargo; El Mulato (Dice, 1937:256); Miquihuana.

Sylvilagus floridanus

Eastern Cottontail

This species occurs throughout Tamaulipas. A female from Soto la Marina, obtained on May 17, was lactating; another from 12 miles northwest of San Carlos, on August 23, carried two embryos that were 15 mm. in crown-rump length.

Sylvilagus floridanus chapmani (J. A. Allen)

1899. *Lepus floridanus chapmani* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 12:12, March 4, type from Corpus Christi, Nueces Co., Texas.

1904. *Sylvilagus (Sylvilagus) floridanus chapmani,* Lyon, Smith. Misc. Coll., 45:336, June 15.

Distribution in Tamaulipas.—Northern two-thirds of state.

A male and pregnant female from 12 miles northwest of San Carlos weighed, respectively, 650 and 690 grams.

Records of occurrence.—Specimens examined, 17: San Fernando, 180 ft., 3; 12 mi. NW San Carlos, 1300 ft., 3; La Pesca, 3; Soto la Marina, 500 ft., 6; Ejido Eslabones, 2 mi. S, 10 mi. W Piedra, 1200 ft., 2.

Additional record: Jaumave (Nelson, 1909:178).

Sylvilagus floridanus connectens (Nelson)

1904. *Lepus floridanus connectens* Nelson, Proc. Biol. Soc. Washington, 17: 105, May 18, type from Chichicaxtle, Veracruz.

1909. *Sylvilagus floridanus connectens,* Lyon and Osgood, Bull. U. S. Nat. Mus., 62:32, January 28.

Distribution in Tamaulipas.—Southern part of state.

This subspecies has been reported previously from Tamaulipas only from Altamira. Specimens from 10 kilometers north and eight kilometers west of El Encino and 70 kilometers south of Ciudad Victoria, judging by their large size, dark color, and ochraceous brown (rather than pale ochraceous as in *S. f. chapmani*) upper sides of the hind feet are assignable to *connectens.*

Goodwin (1954:7) reported specimens from Chamal, Joya de Salas, Gómez Farías, and Pano Ayuctle as *S. f. chapmani,* remarking that they were intergrades between *chapmani* and *connectens.* Specimens reported by Goodwin are here assigned to *S. f. connectens* because the measurements of the specimen from eight kilometers west of El Encino are typical of that subspecies.

Records of occurrence.—Specimens examined, 4: 10 km. N, 8 km. W El Encino, 400 ft., 1; 2 km. W El Carrizo, 2; 9 mi. SW Tula, 5200 ft., 1.

Additional records (Goodwin, 1954:7, unless otherwise noted): Chamal; La Joya de Salas; Gómez Farías; Rancho Pano Ayuctle; Altamira (Nelson, 1909: 186).

Lepus californicus

Black-tailed Jack Rabbit

The black-tailed jack rabbit is the only species of *Lepus* known from Tamaulipas and is represented there by three subspecies, *L. c. merriami* of the northern part of the state, *L. c. altamirae* of the southeastern coastal plains, and *L. c. curti* of the barrier beach south of Matamoros. The known ranges of the three subspecies are not presently known to meet in Tamaulipas.

Lepus californicus altamirae Nelson

1904. *Lepus merriami altamirae* Nelson, Proc. Biol. Soc. Washington, 17: 109, May 18, type from Altamira, Tamaulipas.

1951. *Lepus californicus altamirae*, Hall, Univ. Kansas Publ., Mus. Nat. Hist., 5:45, October 1.

Distribution in Tamaulipas.—Southern coastal plain north certainly to vicinity of Soto la Marina.

The two specimens examined in this study (see below) are intermediate between *L. c. altamirae* and *L. c. curti*, but show greater resemblance to the former. In measurements they resemble *altamirae* rather than the smaller *curti*. They approach the latter in length of hind foot and are intermediate between the two subspecies in basilar length; in one specimen, the dimensions of the rostrum are as in *curti* and the other has the black patch on the posterior surface of the ear well developed, as in *altamirae*, but in the other the black is reduced. *L. c. altamirae* has been known previously only from Altamira.

Measurements.—Two male adults (55415, 55416) from north of Soto la Marina, afford the following external measurements: 610, 590; 100, 100; 124, 125; 124, 122 (length of ear from notch, dry, 114, 110). Cranial measurements are: basilar length, 75.1, 74.4; length of nasals, 46.1, 41.9; width of rostrum at PM, 25.1, 28.7; height of rostrum in front of PM, 25.2, 21.5; diameter of auditory bulla, 14.1, 13.0.

Records of occurrence.—Specimens examined, 2: 3 mi. N Soto la Marina, 1; 2 mi. NW Soto la Marina, 1.

Additional record: Altamira (Nelson, 1904:109).

Lepus californicus curti Hall

1951. *Lepus californicus curti* Hall, Univ. Kansas Publ., Mus. Nat. Hist., 5:42, October 1, type from barrier beach 88 mi. S, 10 mi. W Matamoros, Tamaulipas.

Distribution in Tamaulipas.—Known only by the three specimens mentioned in the original description from two barrier islands in northeastern part of state.

Records of occurrence.—Specimens examined, 3: 88 mi. S, 10 mi. W Matamoros, 2; 90 mi. S, 10 mi. W Matamoros, 1.

Lepus californicus merriami Mearns

1896. *Lepus merriami* Mearns, Preliminary diagnoses of new mammals from the Mexican border of the United States, p. 2, March 25, type from Fort Clark, Kinney Co., Texas.

1909. *Lepus californicus merriami*, Nelson, N. Amer. Fauna, 29:148, August 31.

Distribution in Tamaulipas.—Northern and western parts of state.

The two specimens examined, an adult female and a young male, from the barrier beach 33 miles south of Washington Beach are intergrades between *L. c. merriami*, reported from the mainland from as near as Matamoros, and *L. c. curti*, which occurs farther to the south on the same series of barrier beaches. Of seven characters that seem to differentiate the two subspecies, the adult female from 33 miles south of Washington beach resembles *merriami* in four as follows: tips of ears black (white in *curti*); nasals long; hind foot long; and supraoccipital process broad. The specimen resembles *curti* in shortness of tail and in having small auditory bullae. Breadth of rostrum above premolars, the seventh character, is less than in typical specimens of either of the two subspecies. More material is needed from the barrier beach in order to establish with certainty the relationships between jack rabbits occurring there.

Records of occurrence.—Specimens examined, 4: 33 mi. S Washington Beach, 2; 12 mi. NW San Carlos, 1300 ft., 2.

Additional records: Nuevo Laredo (Nelson, 1909:150); Mier (*ibid.*); Camargo (*ibid.*); Matamoros (Hall, 1951:185); Tamaulipeca, San Carlos Mts. (*ibid.*).

Spermophilus mexicanus parvidens Mearns

Mexican Ground Squirrel

1896. *Spermophilus mexicanus parvidens* Mearns, Preliminary diagnoses of new mammals from the Mexican border of the United States, p. 1, March 25, type from Fort Clark, Kinney Co., Texas.

Distribution in Tamaulipas.—Northern part of state, south at least to Xicotencatl.

Most of the specimens examined from Tamaulipas are in the brown phase (Howell, 1938:121) and differ from *S. m. parvidens* from Texas, Coahuila, and Nuevo León in being darker dorsally. Nevertheless, some individuals are as pale as those examined from the mentioned states. Measurements of Tamaulipan specimens average smaller than those given by Howell (1938:121) and Baker (1956:205) for *parvidens*.

Specimens from San Fernando differ slightly from those from Soto la Marina in having a relatively long tail (average 69.2 instead of 62.1 per cent of length of head and body) and in having the upper parts of the hind feet ochraceous instead of nearly white.

Two May-taken females from Soto la Marina carried 5 and 7 embryos that were 10 mm. in crown-rump length; another taken there was lactating. Weight of six non-pregnant females from San Fernando averaged 160.6 (129-197) grams. Two males from the same locality weighed 164 and 145 grams.

Measurements.—Average and extreme measurements of four males and three females from Soto la Marina are, as follows: 312.6 (296-330); 119.8 (110-130); 41.6 (38-43). Average cranial measurements of five specimens (two males, three females) from same locality are: greatest length of skull, 44.7 (43.7-47.4); zygomatic breadth, 26.9 (25.3-28.6); breadth of braincase, 19.4 (19.2-19.5); interorbital constriction, 13.3 (12.5-14.1); length of nasals, 15.9 (14.6-17.5); length of maxillary tooth-row, 8.3 (8.0-8.5).

Records of occurrence.—Specimens examined, 20: San Fernando, 180 ft., 12; Soto la Marina, 500 ft., 8.

Additional records (Howell, 1938:121 unless otherwise noted): Nuevo Laredo; Mier; Camargo; Reynosa; Bagdad; Victoria; Xecotencatl [= Xicotencatl] (J. A. Allen, 1891:223).

Spermophilus spilosoma oricolus Alvarez

Spotted Ground Squirrel

1962. *Spermophilus spilosoma oricolus* Alvarez, Univ. Kansas Publ., Mus. Nat. Hist., 14:123, March 7, type from 1 mi. E La Pesca, Tamaulipas.

Distribution in Tamaulipas.—Known only from the type locality and from parts of the barrier beach, but possibly occurs at other places in northeastern parts of state.

The 10 specimens from the type locality were trapped or shot on the beach, which was covered by thick, low, scattered bushes and grass. Of the many holes found there, some probably were used by ground squirrels and others by crabs. A female, taken on July 7 with two young at a place 33 miles south of Washington Beach, weighed 133 grams and had six placental scars. This specimen (reported as *Spermophilus spilosoma annectens* by Selander *et al.*, 1962:335) resembles others examined from the barrier beach (see Alvarez, 1962:124) and is therefore assigned to S. *s. oricolus.*

Records of occurrence.—Specimens examined, 24: 33 mi. S Washington Beach, 1; 88 mi. S, 10 mi. W Matamoros, 12; 89 mi. S, 10 mi. W Matamoros, 1; 1 mi. E La Pesca, 10.

Spermophilus variegatus couchii Baird

Rock Squirrel

1855. *Spermophilus couchii* Baird, Proc. Acad. Nat. Sci. Philadelphia, 1:332, April, type from Santa Catarina, a few miles west of Monterrey, Nuevo León.

1955. *Spermophilus variegatus couchii,* Baker, Univ. Kansas Publ., Mus. Nat. Hist., 9:207, June 15.

Distribution in Tamaulipas.—Possibly in southwestern part; reported only from Ciudad Victoria (Howell, 1938:141).

Since Baird (1855:332) described S. *v. couchii* and mentioned a specimen from Ciudad Victoria that was obtained by Berlandier, no other record from Tamaulipas has come to light. Probably the species obtained by Berlandier was introduced at Ciudad Victoria by man.

Sciurus aureogaster aureogaster Cuvier

Red-bellied Squirrel

1829. [*Sciurus*] *aureogaster* Cuvier, *in* Geoffroy St.-Hilaire, and F. Cuvier, Hist. Nat. Mamm., 6, livr. 59 pl. with text, September (binomen published only at end of work, table générale et méthodique, 7:4, 1842), type locality "California"; restricted to Altamira, Tamaulipas, by Nelson (Proc. Washington Acad. Sci., 1:38, May 9, 1899).

Distribution in Tamaulipas.—Tropical forest of southern part; north at least to Rancho Santa Rosa.

According to one collector (Schaldach), natives referred to *Sciurus aureogaster* as "ardilla pinta" or "ardilla colorada." He recorded in his field notes that S. *aureogaster* was most active between 7:00 and 9:00 a. m. and again from 3:00 to 5:00 p. m., that the nest was constructed of green oak leaves, and that the nest resembles somewhat in size and form that of S. *carolinensis*.

Of 53 specimens examined, 17 are black and one from 70 kilometers south of Ciudad Victoria is clearly more whitish than the others. Specimens from the northeastern part of the range of the species (= southeastern Tamaulipas) average darker than those from the south and west. In individuals that are not black, the ventral reddish color covers the shoulders and in some it extends between the shoulders to the median dorsal area.

Among females collected from December through May, only one, taken 43 kilometers south of Ciudad Victoria on March 17, was pregnant (one embryo).

The weight of seven adult males from Soto la Marina and the Sierra de Tamaulipas averaged 492.5 (400-575) grams.

Specimens herein reported from San Fernando provide the northernmost record of the species.

Records of occurrence.—Specimens examined, 53: San Fernando, 180 ft., 5; 9½ mi. SW Padilla, 800 ft., 3; Rancho Santa Rosa, 25 km. N, 13 km. W Cd. Victoria, 260 m., 8; 3 mi. NE Guemes, 5; Soto la Marina (3 mi. N), 500 ft., 6; Sierra de Tamaulipas, 10 mi. W, 8 mi. S Piedra, 1200 ft., 6; 43 km. S Cd. Victoria, 1; Ejido Santa Isabel, 2 km. W Pan-American Highway, 2000 ft., 5; 70 km. (by highway) S Cd. Victoria, 6 mi. W of Pan-American Highway, 3; 2 mi. W El Carrizo, 7; Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft., 2; Rancho Pano Ayuctle, 25 mi. N, 3 km. W El Mante, 300 ft., 1; 8 km. W, 10 km. N El Encino, 400 ft., 1.

Additional records: Río Corono (= Corona) (J. A. Allen, 1891:222); Victoria (Kelson, 1952:249); Santa María (Goodwin, 1954:8); 3 mi. NW Acuña,

3500 ft. (Hooper, 1953:4); Forlón (Nelson, 1899:42); NE Zamorina (Hooper, 1953:4); Gómez Farías (Goodwin, 1954:8); Altamira (Nelson, 1899:42); Tampico (J. A. Allen, 1891:222).

Sciurus deppei negligens Nelson

Deppe's Squirrel

1898. *Sciurus negligens* Nelson, Proc. Biol. Soc. Washington, 12:147, June 3, type from Altamira, Tamaulipas.

1953. *Sciurus deppei negligens*, Hooper, Occas. Papers Mus. Zool., Univ. Michigan, 544:4, March 25.

Distribution in Tamaulipas.—Tropical forest in southern part of state, north to Rancho Santa Rosa and Padilla.

In Tamaulipas this squirrel is called "ardilla chica" or "ardilla barcina," and is abundant in areas where tall trees and dense brush prevail. This species evidently does not have restricted periods of activity, as does S. *aureogaster*, but is active throughout the day. At El Carrizo a nest, nine to 10 inches in diameter and constructed of leaves and small sticks, was in a thick tangle of branches 25 feet above the ground. A male having testes 11 mm. long was in the nest. Among 16 females collected in the months of February, May and June, only two, taken in February, were lactating. A female from 70 kilometers south of Ciudad Victoria, had four placental scars, three on the right side and one on the left, along with a resorbed embryo on the right side; according to the collector "the scars appeared quite recent, as evidenced by the fact that not all of the blood had been resorbed yet."

The northernmost localities from which S. *d. negligens* has been reported are nine and a half miles southwest of Padilla in the east, and Rancho Santa Rosa in the west.

Three males from the vicinity of Padilla weighed 309, 276, and 261 grams.

Records of occurrence.—Specimens examined, 92: 9½ mi. SW Padilla, 800 ft., 3; Rancho Santa Rosa, 25 km. N, 13 km. W Cd. Victoria, 260 m., 8; 3 mi. NE Guemes, 1; Sierra de Tamaulipas, 10 mi. W, 2 mi. S Piedra, 1200 ft., 3; Ejido Santa Isabel, 2 km. W Pan-American Highway, 2000 ft., 20; 70 km. (by highway) S Cd. Victoria and 6 mi. W Pan-American Highway, 43; 2 km. W El Carrizo, 12; 8 km. W, 10 km. N El Encino, 400 ft., 2.

Additional records: Victoria (Nelson, 1898:147); Santa María (Goodwin, 1954:8); Rancho Viejo (*ibid.*); Rancho del Cielo (*ibid.*); 3 mi. NW Acuña (Hooper, 1953:4); Pano Ayuctle (*ibid.*); Gómez Farías (Goodwin, 1954:8); Mesa de Llera, 10 mi. NE Zamorina (Hooper, 1953:4); Altamira (Nelson, 1898:147).

Sciurus alleni Nelson

Allen's Squirrel

1898. *Sciurus alleni* Nelson, Proc. Biol. Soc. Washington, 12:147, June 3, type from Monterrey, Nuevo León.

Distribution in Tamaulipas.—Along Sierra Madre Oriental in southwestern part of state.

This squirrel occurs in stands of oak and "nogalillos" (hickory) trees that grow along streams and arroyos. Individuals are active from sunrise to about 10:00 a. m. and again late in the afternoon. They give a soft "chirring" call.

Nelson (1899:92) noted that specimens from Miquihuana were smaller than those from the type locality. Among specimens I have examined, some are as large as topotypes and two females are larger (total length, 486 and 490) than measurements given for the species by Nelson (*op. cit.*).

Record of occurrence.—Specimens examined, 11, from Joya Verde, 35 km. SW Cd. Victoria, 3800 ft.

Additional records: Near Victoria (Nelson, 1899:92); Miquihuana (*ibid.*); Joya de Salas (Goodwin, 1954:8).

Glaucomys volans herreranus Goldman

Southern Flying Squirrel

1936. *Glaucomys volans herreranus* Goldman, Jour. Washington Acad. Sci., 26:463, November 15, type from Mts. of Veracruz.

Distribution in Tamaulipas.—Known only from Aserradero del Infernillo (Goodwin, 1954:9 and 1961:9).

Geomys personatus personatus True

Texas Pocket Gopher

1889. *Geomys personatus* True, Proc. U. S. Nat. Mus., 11:159 for 1888, January 5, type from Padre Island, Cameron County, Texas.

Distribution in Tamaulipas.—Known only from the barrier beach in northeastern part of state.

The specimens examined are referred, tentatively, to *Geomys personatus personatus* on geographic grounds. They average smaller in all measurements than *personatus* (but are larger than *G. p. megapotamus*), do not have the sagittal crest that usually is present in *personatus*, and the shape of the pterygoid bones is distinctive. In *personatus* and *megapotamus* the ventral border of the pterygoids (in lateral view) is convex instead of nearly straight as in specimens from the barrier beach. The specimens recorded here are all that are known of *G. personatus* (see account of *G. tropicalis*) from México.

Measurements.—Average and extreme external measurements of five females from 73 miles south of Washington Beach are as follows: 266.8 (263-271); 94.8 (91-98); 34 (33-35). Cranial measurements of two males (89038, 89032) and average and extremes of five females are respectively: basal length, 49.1, 46.6, 45.9 (44.2-46.8); basilar length, 42.9, 40.0, 39.8 (38.0-40.8); zygomatic breadth, 29.6, 28.3, 28.0 (25.7-29.9); squamosal breadth, 27.8, 25.9, 26.2 (23.8-25.4); interorbital constriction, 7.4, 6.9, 7.3 (6.7-7.8); alveolar length of maxillary tooth-row, 10.3, 9.2, 9.4 (9.1-9.7).

Records of occurrence.—Specimens examined, 17: 35 mi. SSE Matamoros, 8; 33 mi. S Washington Beach, 1; 73 mi. S Washington Beach, 8.

Additional record: 4 mi. S Washington Beach (Selander *et al.*, 1962:335—possibly fragmentary skeletal remains never catalogued in any research collection).

Geomys tropicalis Goldman

Tropical Pocket Gopher

1915. *Geomys personatus tropicalis* Goldman, Proc. Biol. Soc. Washinton, 28:134, June 29, type from Altamira, Tamaulipas.

Distribution in Tamaulipas.—Known only from vicinity of type locality, in southeastern part of state.

Geomys tropicalis was named as a subspecies of *G. personatus* in 1915 by E. A. Goldman. To my knowledge, no one other than Goldman has critically studied specimens of this pocket gopher, nor have specimens other than those listed in the original description been reported up to now. In 1953, Gerd H. Heinrich collected a series of 19 individuals one mile south of Altamira. These specimens were compared (by E. R. Hall in March, 1962) with the holotype and paratypes of *G. p. tropicalis* and were found to be indistinguishable.

Careful comparisons of the specimens from one mile south of Altamira with topotypes of *G. personatus personatus* (and specimens of other subspecies) indicate that *tropicalis* differs from *personatus* in a number of important characters, some of which *tropicalis* shares with *Geomys arenarius* of the Rio Grande Valley and adjacent areas in Texas, New Mexico, and Chihuahua (see Table 2).

As can be seen in the accompanying table *tropicalis* resembles *arenarius* in half of the eight characters considered, especially in the presence of a knob on the zygomatic process of the squamosal (the diagnostic character of *arenarius* according to Merriam, 1895:140) and in the shape of the mesopterygoid fossa. *G. tropicalis* differs from *arenarius* principally in having a low sagittal crest in adult males (lacking in *arenarius*) and in the shape of the interparietal

TABLE 2.—DIFFERENCES BETWEEN THREE SPECIES OF GEOMYS.

	G. arenarius	*G. personatus*	*G. tropicalis*
Zygomatic arches	parallel	narrower posteriorly	narrower posteriorly
Sagittal crest	absent	present	small
Squamosal knob	present	absent	present
Interparietal	subquadrant	triangular	triangular
Mesopterygoid fossa	V-shaped	U-shaped	V-shaped
Ratio, zygomatic breadth to basal length	63.7–66.6	66.3–67.2	60.8–66.2
Ratio, mastoid breadth to basal length	58.0–60.4	59.8–63.1	58.0–59.6
Border of premaxilla at incisive foramina	wedge-shaped	subquadrate	subquadrate

bone, which in *tropicalis* is small (in some skulls difficult to see) and triangular instead of being relatively large and subquadrate as in *arenarius*.

G. tropicalis resembles *personatus* in half of the characters considered, notably in shape of the interparietal bone, outline of zygomatic arches, and constriction of the premaxillae where they border the incisive foramina.

Considering the distinctive combination of characters possessed by *tropicalis*, and its isolated, restricted geographic range (the nearest known record of *Geomys* is approximately 165 miles to the north), *tropicalis* is here regarded as a full species. A skull alone examined from 10 miles northwest of Tampico does not differ from those of other specimens studied.

The average weight of five non-pregnant July-taken females was 189.4 (180-200) grams. Weights of three males were 280, 270, and 255 grams. Females are in all measurements smaller than males.

Measurements.—Average and extreme measurements of five females and three males from one mile south of Altamira are, respectively, as follows: 243.5 (235-250), 260, 260, 265; 82.0 (78-85), 87, 93, 89; 32.2 (31-33), 35, 35, 33; ear from notch in both sexes, 5; condylobasal length, 42.3 (41.3-43.1), 46.0, 48.0, 46.2; zygomatic breadth, 26.6 (25.1-27.7), 30.4, 31.2, 30.5; interorbital constriction, 6.2 (6.1-6.3), 6.0, 6.2, 6.3; length of nasals, 14.6 (14.0-15.3), 17.0, 16.8, 15.9; alveolar length of maxillary tooth-row, 9.0 (8.6-9.3), 9.9, 10.0, 9.4.

Records of occurrence.—Specimens examined, 19: 1 mi. S Altamira, 18; 10 mi. NW Tampico, 1.

Additional record: Altamira (Goldman, 1915:134).

Heterogeomys hispidus negatus Goodwin

Hispid Pocket Gopher

1953. *Heterogeomys hispidus negatus* Goodwin, Amer. Mus. Novit., 1620:1, May 4, type from Gómez Feras [Farías], 1300 ft., Tamaulipas.

Distribution in Tamaulipas.—Known only from the vicinity of the type locality.

Specimens of this pocket gopher were taken in large Macabee traps, at night with the aid of a dog, and by natives using slingshots. Mounds of *H. hispidus* were common two miles west of El Carrizo near banana trees; the mouths of burrows were four to five inches in diameter. Two females collected at this locality on April 16 and 17 were lactating.

Specimens examined of *H. hispidus* from Tamaulipas resemble the description of *H. h. negatus* more than that of *H. h. concavus*, and are referred, therefore, to *negatus*. I assume, on geographic grounds, that the individuals reported by Hooper (1953:5) as *concavus* are *negatus;* they are here referred to as *negatus*. If this referral is correct, the subspecies *concavus* probably does not occur in Tamaulipas.

Records of occurrence.—Specimens examined, 6: Ejido Santa Isabel, 2 km. W Pan-American Highway, 2000 ft., 1; 2 km. W El Carrizo, 1; 5 km. W El Carrizo, 4.

Additional records: Rancho Pano Ayuctle (Hooper, 1953:5); Gómez Farías (Goodwin, 1953:1).

Cratogeomys castanops
Yellow-faced Pocket Gopher

Two subspecies of *Cratogeomys castanops* occur in Tamaulipas, *C. c. planifrons* in the higher elevations of the Sierra Madre Oriental in the western part of the state, and *C. c. tamaulipensis* on the plains of the Río Grande.

Specimens from Miquihuana were trapped in tunnels at 6400 feet elevation. At Palmillas, individuals were trapped in an area of mesquite, other bushes and "lechuguilla." Three specimens from southeast of Reynosa were collected in traps set along the dikes of irrigation ditches. Most specimens from Nicolás were brought by natives to the collector, but some were caught in traps set in tunnels among the desert bushes.

Cratogeomys castanops planifrons Nelson and Goldman

1943. *Cratogeomys castanops planifrons* Nelson and Goldman, Proc. Biol. Soc. Washington, 47:146, June 13, type from Miquihuana, 5000 ft., Tamaulipas.

Distribution in Tamaulipas.—Higher elevations in southwestern part of state.

Specimens from four miles north of Jaumave do not differ from specimens from Miquihuana. The weights of nine females averaged 146.4 (110-210) grams; three males weighed 178, 203, and 215 grams.

Records of occurrence.—Specimens examined, 29: Miquihuana, 6400 ft., 9; 4 mi. N Jaumave, 2500 ft., 5; Nicolás, 56 km. NW Tula, 5500 ft., 15.

Cratogeomys castanops tamaulipensis Nelson and Goldman

1934. *Cratogeomys castanops tamaulipensis* Nelson and Goldman, Proc. Biol. Soc. Washington, 47:141, June 13, type from Matamoros, Tamaulipas.

Distribution in Tamaulipas.—Known only from two localities in extreme northern part of state, but probably occurs throughout northeastern part of state.

Three specimens from three miles southeast of Reynosa are referred to *C. c. tamaulipensis* on geographic grounds. They are tawny brown dorsally instead of cinnamon brown or pinkish cinnamon as Nelson and Goldman (1943:141) described *tamaulipensis*, and the basioccipital bone (in one male) is parallel-sided instead of wedge-shaped. Possibly this difference is owing to sex; Nelson and

Goldman studied only one adult, a female (the type), and the only adult seen by me was a male.

Measurements.—An adult male (58118) from three miles southeast of Reynosa, measured as follows: 301; 81; 40; 7; condylobasal length, 57.0; zygomatic breadth, 41.2; palatal length, 36.1; breadth of rostrum, 11.8; length of nasals, 22.0; squamosal breadth, 34.0; alveolar length of maxillary tooth-row, 10.8.

Records of occurrence.—Specimens examined, 3, from 3 mi. SE Reynosa.

Additional record: Matamoros (Nelson and Goldman, 1934:140).

Perognathus merriami merriami J. A. Allen

Merriam's Pocket Mouse

1892. *Perognathus merriami* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 4:45, March 25, type from Brownsville, Cameron Co., Texas.

Distribution in Tamaulipas.—State-wide except southwestern part.

Most of the available specimens of *P. m. merriami* were collected in the semi-arid areas of mesquite and grasses. At Soto la Marina *P. m. merriami* was abundant in open fields surrounded by brush. One female, collected on July 4, one mile south of Altamira was lactating. Weights of 16 adults from Soto la Marina and that of nine adults from the vicinity of San Fernando are, respectively: 8.2 (7-10) and 8.1 (7-9) grams.

Specimens from Tamaulipas are darker than those examined from Coahuila and southern Texas. A skull picked up on the barrier beach, 73 miles south of Washington Beach, differs from all other skulls examined in having the rostrum (3.6 mm.) and M1 (4.3) wider, auditory bullae relatively smaller, and glenoid fossa larger (2.6 instead of less than 2.3 in specimens from Soto la Marina).

Records of occurrence.—Specimens examined, 46: 4—4.5 mi. S Nuevo Laredo, 900 ft., 4; 10 mi. S, 11 mi. E Nuevo Laredo, 600 ft., 2; 1 mi. S Santa Teresa, 1; San Fernando, 180 ft., 1; 2 mi. W San Fernando, 180 ft., 14; 73 mi. S Washington Beach, 1; 12 mi. NW San Carlos, 1300 ft., 1; Soto la Marina, 19; Ciudad Victoria, 1; 17 mi. SW Tula, 3900 ft., 1; 1 mi. S Altamira, 1.

Additional records (Osgood, 1900:22, unless otherwise noted): Mier; Reynosa; Matamoros; 40 mi. S Matamoros (Hooper, 1953:5); Hidalgo; Altamira.

Perognathus hispidus hispidus Baird

Hispid Pocket Mouse

1858. *Perognathus hispidus* Baird, Mammals, in Repts. Expl. Surv. . . ., 8(1):421, July 14, type from Charco Escondido, Tamaulipas.

Distribution in Tamaulipas.—Central and northern parts of state.

Two specimens examined from the vicinity of Nuevo Laredo were trapped in weeds and tall grass along an irrigation ditch that ran between desert and a cornfield. One was a lactating female (November 15) and weighed 31 grams; the other, an immature male,

weighed 23 grams. A May-taken specimen from Soto la Marina possesses a broader and more ochraceous lateral line than the other three individuals examined from Tamaulipas and the Texan specimens seen.

Records of occurrence.—Specimens examined, 4: 10 mi. S, 11 mi. E Nuevo Laredo, 600 ft., 2; Soto la Marina, 500 ft., 1; 9½ mi. SW Padilla, 800 ft., 1.

Additional records (Osgood, 1900:44, unless otherwise noted): Mier; Matamoros; Charco Escondido (Baird, 1858:422); 3 mi. W Soto la Marina (Hooper, 1953:5).

Perognathus nelsoni nelsoni Merriam

Nelson's Pocket Mouse

1894. *Perognathus (Chaetodipus) nelsoni* Merriam, Proc. Acad. Nat. Sci. Philadelphia, 46:266, September 27, type from Hacienda La Parada, about 25 mi. NW Cd. San Luis Potosí, San Luis Potosí.

Distribution in Tamaulipas.—Known only from the west side of the Sierra Madre Oriental in southwestern part of state.

Most of the specimens examined were taken in semi-arid habitats where the dominant plants were cactus, weeds and bushes.

In Tamaulipas, specimens from the southern localities (places labeled with reference to Tula) are darker than those from the two northernmost localities (Miquihuana and four miles north of Jaumave). Most measurements are about equal in the southern and northern specimens, but in some measurements southern specimens average slightly smaller than those from the north. Greatest length of skull is a case in point. The difference in size is reflected in the weights. Average weights of nine males and nine females from southern localities are, respectively, 14.7 (12-16.5) and 13.8 (12-15.5) instead of 18.5 (17-20) and 17.0 (15-18) grams for four males and six females from the northern localities. In general, Tamaulipan specimens average somewhat smaller than those from other localities in eastern México (see measurements given by Baker, 1956:238, Dalquest, 1953:107, and Osgood, 1900:53).

Measurements.—Average and extreme measurements of six specimens (2 males and 4 females) from Miquihuana, three males from four miles north of Jaumave, and five (3 males and 2 females) from nine miles southwest of Tula are, respectively, as follows: 176.2 (163-185), ——, 170, 173, (4 specimens only) 179.0 (165-186); 99.8 (97-105), ——, 90, 93, (4 specimens only) 96.7 (88-104); 22.5 (21-23), 23, 23, 24, 22.6 (22-23); 8 (8), 8, 8, 8, 8.8 (8-9); greatest length of skull, 26.1 (25.6-26.6), 25.8, 26.5, 26.9, 25.2 (24.9-25.7); mastoid breadth, 13.3 (12.9-13.6), 13.2, 13.8, 13.6, 13.1 (12.9-13.4); interorbital constriction, 6.4 (6.1-6.6), 5.9, 6.3, 6.3, 6.3 (6.1-6.8); interparietal breadth, 7.4 (6.8-7.9), 7.7, 7.2, 7.2, 7.6 (7.3-7.9); alveolar length of maxillary tooth-row, 3.7 (3.5-4.0); 3.6, 3.5, 3.6, 3.6 (3.5-3.8).

Records of occurrence.—Specimens examined, 42: Miquihuana, 6300 ft., 7; 4 mi. N Jaumave, 2500 ft., 5; Nicolás, 56 km. NW Tula, 5500 ft., 10; Tajada,

23 mi. NW Tula, 5200 ft., 6; 8 mi. N Tula, 4500 ft., 1; 9 mi. SW Tula, 3900 ft., 13.

Additional record: Jaumave (Miller, 1924:284).

Dipodomys ordii

Ord's Kangaroo Rat

This species has a restricted geographic distribution in Tamaulipas, although three subspecies occur in the state; two of them occur in the extreme northeast and the other in the far west.

Dipodomys ordii durranti Setzer

1949. *Dipodomys ordii fuscus* Setzer, Univ. Kansas Publ., Mus. Nat. Hist., 1:555, December 27, type from Jaumave, Tamaulipas.

1952. *Dipodomys ordii durranti* Setzer, Jour. Washington Acad. Sci., 42: 391, December 17, a renaming of *D. o. fuscus* Setzer, 1949.

Distribution in Tamaulipas.—Semi-desert areas in western part of state.

The specimen examined from four miles north of Jaumave was trapped in a xeric area in which the vegetation consisted of mesquite, high palmlike yuccas, and "lechugilla." Specimens from the vicinity of Tula were trapped along bushy fence rows and adjacent to clumps of bushes and cactus, or shot at night in an area in which the soil was a sandy loam having relatively large amounts of gravel. The average weight of seven specimens from Nicolás was 50.3 (42-60) grams.

According to Lidicker (1960:178 and in *litt.*), the place called Lulú that was ascribed to Tamaulipas by Setzer (1949:550), and from which *D. o. durranti* was reported, actually is in Zacatecas.

Records of occurrence.—Specimens examined, 19: Miquihuana, 6200 ft., 2; 4 mi. N Jaumave, 2500 ft., 3; Nicolás, 56 km. NW Tula, 12; 8 km. N Tula, 4500 ft., 2.

Additional records (Setzer, 1949:556): Nuevo Laredo; Jaumave.

Dipodomys ordii parvabullatus Hall

1951. *Dipodomys ordii parvabullatus* Hall, Univ. Kansas Publ., Mus. Nat. Hist., 5:38, October 1, type from 88 mi. S and 10 mi. W Matamoros, Tamaulipas.

Distribution in Tamaulipas.—Known only from two islands off the barrier beach.

Weight of four adults averaged 49.2 (44-60) grams.

Records of occurrence.—Specimens examined, 17: 33 mi. S Washington Beach, 4; 88 mi. S, 10 mi. W Matamoros, 7; 90 mi. S, 10 mi. W Matamoros, 6.

Dipodomys ordii compactus True

1889. *Dipodomys compactus* True, Proc. U. S. Nat. Mus., 11:160, January 5, type from Padre Island, Cameron Co., Texas.

1942. *Dipodomys ordii compactus*, Davis, Jour. Mamm., 23:332, August 13.

Distribution in Tamaulipas.—Reported only from Bagdad (Hall, 1951:41).

Dipodomys merriami atronasus Merriam

Merriam's Kangaroo Rat

1894. *Dipodomys merriami atronasus* Merriam, Proc. Biol. Soc. Washington, 9:113, June 21, type from Hacienda La Parada, about 25 mi. NW San Luis Potosí, San Luis Potosí.

Distribution in Tamaulipas.—Mexican Plateau in western part of state.

Specimens examined are tentatively assigned to *Dipodomys merriami atronasus.* They differ from typical *atronasus* as pointed out by Lidicker (1960:177). He noted that individuals from the eastern edge of the range of *D. m. atronasus* were slightly paler than typical specimens, but I found Tamaulipan material to be much darker, especially behind the nose and ears (blackish instead of brownish), than specimens from Aguascalientes, San Luis Potosí and Zacatecas.

Specimens examined were collected under the same conditions and in the same areas as *D. ordii durranti.* The average weight of 20 adults (11 females and nine males) was 46.6 (38-50) grams.

Records of occurrences.—Specimens examined, 27: Nicolás, 56 km. NW Tula, 5500 ft., 16; Tajada, 23 mi. NW Tula, 5200 ft., 4; 15 mi. N Tula, 1; 8 mi. N Tula, 4500 ft., 3; 9 mi. SW Tula, 3900 ft., 3.

Additional record: Tula (Lidicker, 1960:178).

Liomys irroratus

Mexican Spiny Pocket Mouse

This species is probably the most common rodent in Tamaulipas. It was taken at almost every locality sampled and was associated with many other kinds of rodents. Its distribution is state-wide with the exception of the extreme northwestern part. Two subspecies are represented in Tamaulipas, *L. i. alleni*, which occurs in the western side of the Sierra Madre Oriental in the southwest part of the state, and *L. i. texensis*, which occupies the rest of the range of the species in the state.

At Soto la Marina specimens were taken in dense brush, around the cultivated fields; no burrows were seen and all specimens were trapped before 10:00 p. m. On the Sierra de Tamaulipas, *Liomys* was collected in practically all microhabitats. In the vicinity of San Fernando, individuals were trapped in a dry area in which vegetation consisted of mesquite, cactus and chollas; the ground there was covered with dry leaves and small sticks, and burrows were found near the base of the mesquite bushes. One specimen was taken near the house of a woodrat. Two kilometers west of El Carrizo, where *Liomys irroratus* is called "ratón tuza," specimens were collected on rocks inclined at an angle of about twenty-five

degrees that were covered with zacatón grass and some bushes. Some individuals were taken in a sugar cane field that was surrounded by bushes and tall grass; *Baiomys taylori, Sigmodon hispidus,* and *Peromyscus leucopus* were taken in the line of traps. One specimen was caught in a trap baited with banana.

Some dates concerning reproduction of *Liomys irroratus* in Tamaulipas are as follows: La Pesca, May 25, one female lactating and one female pregnant with 4 embryos that measured 8 mm.; Jaumave, July 26-29, three females lactating and three pregnant females that carried 6 embryos (6 mm.), 6 embryos (15 mm.), and 5 embryos (15 mm.); Palmillas, July 23, a female with 1 embryo measuring 6 mm.; Nicolás, October 19, a female carrying 4 embryos measuring 3 mm.

Liomys irroratus alleni (Coues)

1881. *Heteromys alleni* Coues, Bull. Mus. Comp. Zool., 8:187, March, type from Río Verde, San Luis Potosí.

1911. *Liomys irroratus alleni,* Goldman, N. Amer. Fauna, 34:56, September 7.

Distribution in Tamaulipas.—Extreme southwestern part of state.

This subspecies is easily distinguished from *L. i. texensis* by the following features: hind foot larger, 31.5 (30-33.5) instead of 27.8 (27-29); skull longer, 34.2 (32.4-36.4) instead of 31.5 (30.0-32.5); maxillary tooth-row longer, 5.4 (5.0-5.8) instead of 5.0 (4.8-5.1); interorbital constriction relatively narrower in *alleni.* Intergradation between *L. i. alleni* and *L. i. texensis* takes place at Rancho Santa Rosa (where, of the two specimens, one is conspicuously larger than the other), eight kilometers northeast of Antiguo Morelos, El Encino, and Ejido Santa Isabel. All specimens from the localities mentioned are here assigned to *texensis.*

Weight of three pregnant females averaged 68.9 (64-78) grams, that of non-pregnant females, 65.6 (64-68), and that of six males 73.0 (65-80).

Records of occurrence.—Specimens examined, 34: Villa Mainero, 1700 ft., 2; Nicolás, 56 km. NW Tula, 5500 ft., 6; Jaumave, 2400 ft., 23; 16 mi. N, 6 mi. W Palmillas, 5500 ft., 1; 14 mi. N, 6 mi. W Palmillas, 5500 ft., 2.

Additional records: Miquihuana (Goldman, 1911:56); Tula (Hooper and Handley, 1958:18).

Liomys irroratus texensis Merriam

1902. *Liomys texensis* Merriam, Proc. Biol. Soc. Washington, 15:44, March 5, type from Brownsville, Cameron Co., Texas.

1911. *Liomys irroratus texensis,* Goldman, N. Amer. Fauna, 34:59, September 7.

Distribution in Tamaulipas.—State-wide except extreme southwestern and northwestern parts.

Intergradation occurs between *L. i. texensis* and *L. i. pretiosus* in southeastern Tamaulipas as noted previously by Hooper (1953:5). Individuals from Altamira and one mile south thereof are small and dark as in *pretiosus,* but cranial measurements are as in *texensis* to which they are here assigned. Specimens from the vicinity of Tampico are typical *texensis.*

Average weight of the specimens from three different localities are as follows: Soto la Marina, seven males, 42.7, 14 females, 36.9; Sierra de Tamaulipas, 12 males, 47.3, 20 females, 40.7; Sierra Madre Oriental, eight males, 45.5, nine females, 37.0 grams.

The specimens reported by Ingles (1959:394) from two miles south of El Mante as *L. irroratus* are here referred to *texensis* on geographic grounds.

Records of occurrence.—Specimens examined, 121: 7 km. S, 2 km. W San Fernando, 7; 7 km. SW La Purisima, 1; Rancho Santa Rosa, 25 km. N, 13 km. W Cd. Victoria, 260 m., 2; 36 km. N, 10 km. W Cd. Victoria, 1; 15 mi. N Cd. Victoria, 2; 4 mi. N La Pesca, 5; Soto la Marina, 25; Sierra Madre Oriental, 5 mi. S, 3 mi. W Cd. Victoria, 1900 ft., 18; Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra, 1200 ft., 36; Sierra de Tamaulipas, 3 mi. S, 10 mi. W Piedra, 1200 ft., 1; Ejido Santa Isabel, 2 km. W Pan-American Highway, 2000 ft., 3; Rancho Pano Ayuctle, 25 mi. N, 3 km. W El Mante, 300 ft., 1; Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft., 8; 10 km. N, 8 km. W El Encino, 400 ft., 1; 2 km. W El Carrizo, 6; 53 km. N El Limón, 4; 8 km. NE Antiguo Morelos, 2; Altamira, 1; 1 mi. S Altamira, 3; 10 mi. NW Tampico, 1; 7 km. N Tampico, 2.

Additional records: Hidalgo (Goldman, 1911:59); Matamoros (*ibid.*); Bagdad (*ibid.*); Sierra de San Carlos (Hooper and Handley, 1948:20); 3 mi. W Soto la Marina (Hooper, 1953:5); [Cd.] Victoria (Goldman, 1911: 59); Acuña (Hooper and Handley, 1948:20); Mesa de Llera (Hooper, 1953:5); Gómez Farías (Goodwin, 1954:9); 2 mi. S Cd. Mante (Ingles, 1959:394); Antiguo Morelos (Hooper and Handley, 1948:20).

Castor canadensis mexicanus V. Bailey

Beaver

1913. *Castor canadensis mexicanus* V. Bailey, Proc. Biol. Soc. Washington, 26:191, October 23, type from Ruidoso Creek, 6 mi. below Ruidoso, Lincoln Co., New Mexico.

Distribution in Tamaulipas.—Probably in the Río Grande drainage.

The beaver has been reported in Tamaulipas only from Matamoros (Baird, 1858:355—three specimens) and from 12 miles below, south of, Matamoros (V. Bailey, 1905:124). In Tamaulipas the beaver may occur only in the Río Grande drainage.

Oryzomys palustris

Marsh Rice Rat

Previous to this report only one subspecies of *Oryzomys palustris* had been recorded from Tamaulipas. Careful examination of the available material from the state shows that *O. p. aquaticus* occurs in the east and *O. p. peragrus* lives in the southwestern part of the state.

In general, specimens examined were trapped in dense brush alongside waterholes as at Altamira, or around cornfields as at the place 36 kilometers north and 10 kilometers west of Ciudad Victoria, where the bushes were mesquite and other kinds of Acacias. There the ground was covered by cat claw, and no grass was seen near the traps in which *O. palustris* was caught. In the Sierra de Tamaulipas a specimen was caught among rocks and bushes. Ingles (1959:395) reported that his specimens were trapped alive in dense brush and "tules."

A female taken at Jaumave on July 25 had 5 embryos, each 20 mm. in crown-rump length.

Oryzomys palustris aquaticus J. A. Allen

1891. *Oryzomys aquaticus* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 3:289, June 30, type from Brownsville, Cameron Co., Texas.

1918. *Oryzomys couesi aquaticus*, Goldman, N. Amer. Fauna, 43:39, September 23.

1960. *Oryzomys palustris aquaticus*, Hall, The Southwestern Nat., 5:173, November 1.

Distribution in Tamaulipas.—North part of state, and coastal area south to Tampico.

Weights of two males were 80 and 82, and of a female 66 grams.

Oryzomys palustris aquaticus differs from *O. p. peragrus* in having a rich cinnamon, reddish color and the interorbital region constricted to less than 14.7 per cent of the greatest length of the skull. *O. p. peragrus* is ochraceous and grayish. The least width of its interorbital region is more than 14.5 per cent of the greatest length of the skull. Individuals studied from the Sierra de Tamaulipas are typical *aquaticus*. Of those from Altamira, one has the color as in *aquaticus*, but the color of the other two resembles that of *peragrus;* nevertheless, all of the mentioned specimens are here assigned to *aquaticus*.

Records of occurrence.—Specimens examined, 4: Sierra de Tamaulipas, 10 mi. W, 2 mi. S Piedra, 1200 ft., 1; 6 mi. N, 6 mi. W Altamira, 2; 5 mi. N, 5 mi. W Altamira, 1.

Additional records: Camargo (Goldman, 1918:40); Matamoros (*ibid.*); near Cd. Tampico (Ingles, 1958:395).

Oryzomys palustris peragrus Merriam

1901. *Oryzomys mexicanus peragrus* Merriam, Proc. Washington Acad. Sci., 3:283, July 26, type from Río Verde, San Luis Potosí.

1918. *Oryzomys couesi perargrus*, Goldman, N. Amer. Fauna, 43:39, September 23.

1960. *Oryzomys palustris peragrus*, Hall, The Southwestern Nat., 5:173, November 1.

Distribution in Tamaulipas.—Western part of state, along Sierra Madre Oriental.

Two males from Jaumave weighed 62 and 65 and one pregnant female weighed 67 grams.

Most records of *O. p. peragrus* are from places along the Sierra Madre Oriental, but Lawrence (1947:103) recorded a specimen from the Río Corona, which is east of, but not far from the mentioned Sierra. Baker (1951:215) reported two specimens from two different localities labeled with reference to Ciudad Victoria (same specimens reported here) as *O. p. aquaticus,* but pointed out that they tended "toward the darker *O. c. peragrus.*" Examination of more material and taking into consideration the relation between the interorbital constriction and the greatest length of skull, cause me here to refer those specimens to *peragrus.*

Hooper (1953:8) reported three young specimens from Rancho Pano Ayuctle as of the subspecies *aquaticus,* but study of two adults from the same locality reveals that this locality should be included within the geographic range of *peragrus.*

Records of occurrence.—Specimens examined, 9: 36 km. N, 10 km. W Cd. Victoria, 1; Jaumave, 2400 ft., 5; Rancho Pano Ayuctle, 25 mi. N, 3 km. W El Mante, 2; 70 km. S Cd. Victoria (by highway) and 6 km. W of Highway, 1.

Additional records: Río Corana (Lawrence, 1947:103); Pano Ayuctle (Hooper, 1953:8).

Oryzomys melanotis

Black-eared Rice Rat

Oryzomys melanotis occurs in Tamaulipas from Soto la Marina southward. Two subspecies are recorded: *O. m. carrorum* in the north and *O. m. rostratus* in the tropical area from Rancho Pano Ayuctle to Altamira.

Specimens from the Sierra de Tamaulipas were trapped along a stream, edged with trees, bushes and rocks; at Rancho Pano Ayuctle the animals were in grass between banana groves. The specimen from 70 kilometers south of Ciudad Victoria was taken in tall grass near a field of sugar cane in a line of traps that yielded also *Peromyscus leucopus, Sigmodon hispidus, Liomys irroratus,* and *Oryzomys fulvescens.* Hooper (1953:8) and Ingles (1959:395) reported *O. melanotis* as caught at the edges of cane fields.

Oryzomys melanotis carrorum Lawrence

1947. *Oryzomys rostratus carrorum* Lawrence, Proc. New England Zool. Club, 24:101, May 29, type from Rancho Santa Ana, about 8 mi. SW Padilla, Río Soto la Marina, Tamaulipas.

1959. *Oryzomys melanotis carrorum,* Hall and Kelson, The Mammals of North America, 2:560, March 21.

Distribution in Tamaulipas.—Southeast part of state; known only from the type locality and the Sierra de Tamaulipas.

The original description of this subspecies was based on three specimens collected at Rancho Santa Ana. Specimens examined from the Sierra de Tamaulipas extended the known range 45 miles southeast of the type locality, and also extend the previously known altitudinal range of 300-350 feet elevation to 1200 feet.

Specimens examined correspond in color and measurements to those recorded by Lawrence (1947:102-103). Of 12 specimens studied, the tympanic bullae of six touch the surface of the table when the skull rests on the tips of the incisors and the occipital condyles. In the other six the bullae are 0.3 to 1.3 mm. above the table top. The mesopterygoid space in the specimens examined are broad and U-shaped and not V-shaped as in the three specimens examined by Lawrence (*op. cit.*). Weight of six males was 52.5 (48-63) and of four females 44.7 (40-49) grams.

Measurements.—Average and extreme measurements of six males are as follows: 255.3 (240-269); 135.7 (120-147); 135.7 (120-147); 30.4 (30-31); 21 (20-22); greatest length of skull, 31.6 (30.9-32.5); zygomatic breadth, 15.3 (14.7-16.1); interorbital constriction, 4.8 (4.5-5.1); breadth of skull, 31.6 (30.9-32.5); length of nasals, 12.9 (12.4-13.4); length of anterior palatine foramina, 5.5 (5.2-5.7); length of palatal bridge, 6.1 (5.8-6.4); length of maxillary tooth-row, 4.0 (3.9-4.1). The females average slightly smaller.

Records of occurrence.—Specimens examined, 12 from Sierra de Tamaulipas, 10 mi. W, 2 mi. S Piedra, 1200 ft.

Additional record: Type locality (Lawrence, 1947:102).

Oryzomys melanotis rostratus Merriam

1901. *Oryzomys rostratus* Merriam, Proc. Washington Acad. Sci., 3:293. July 26, type from Metlatoyuca, Puebla.

1953. *Oryzomys melanotis rostratus,* Hooper, Occ. Papers Mus. Zool., Univ. Michigan, 544:8, March 25.

Distribution in Tamaulipas.—Extreme southeastern part of state, in tropical area.

Ingles (1959:395) reported one specimen from two miles north of Ciudad Mante as *O. melanotis;* here it is referred to *O. m. rostratus* on geographic grounds.

Records of occurrence.—Specimens examined, 2: 2 km. W El Carrizo, 1; Rancho Pano Ayuctle, 25 mi. N El Mante and 3 km. W Highway, 1.

Additional records: 2 mi. N Cd. Mante (Ingles, 1959:395); Altamira (Goldman, 1918:54).

Oryzomys alfaroi huastecae Dalquest

1951. *Oryzomys alfaroi huastecae* Dalquest, Jour. Washington Acad. Sci., 41:363, November 14, type from 10 km. E Platanito, San Luis Potosí.

Distribution in Tamaulipas.—Known only from Rancho del Cielo (Hooper, 1953:8).

Oryzomys fulvescens
Pygmy Rice Rat

The pygmy rice rat in Tamaulipas was collected in grass. Two kilometers west of El Carrizo in grass around a sugar cane field, traps, baited with scraps of deer meat, caught *Oryzomys fulvescens,*

Sigmodon hispidus, Peromyscus leucopus and *Liomys irroratus.* Seven kilometers north of Tampico, *O. fulvescens* was taken along with *Peromyscus leucopus, Sigmodon hispidus* and *Baiomys taylori.*

A female obtained on March 2, at Rancho Pano Ayuctle, had 4 embryos 16 mm. in crown-rump length.

Oryzomys fulvescens fulvescens (Saussure)

1860. *H[esperomys]. fulvescens* Saussure, Revue et Mag. Zool., Paris, ser. 2, 12:102, March, type from Veracruz; fixed by Merriam (Proc. Washington Acad. Sci., 3:295, July 26, 1901) at Orizaba.

1897. *Oryzomys fulvescens,* J. A. Allen and Chapman, Bull. Amer. Mus. Nat. Hist., 9:204, June 16.

Distribution in Tamaulipas.—Reported only from Rancho del Cielo (Goodwin, 1954:10).

Oryzomys fulvescens engracie Osgood

1945. *Oryzomys fulvescens engracie* Osgood, Jour. Mamm., 26:300, November 14, type from Hacienda Santa Engracia (32 km. N), NW of Cd. Victoria, Tamaulipas.

Distribution in Tamaulipas.—Central and southeast parts of state.

Records of occurrence.—Specimens examined, 13: 2 km. W El Carrizo, 5; Rancho Pano Ayuctle, 25 mi. N, 3 km. W El Mante, 6; 10 km. N, 8 km. W El Encino, 1; 7 km. N Tampico, 1.

Additional record: Altamira (Osgood, 1945:300).

Reithrodontomys megalotis hooperi Goodwin

Western Harvest Mouse

1954. *Reithrodontomys megalotis hooperi* Goodwin, Amer. Mus. Novit., 1660:1, May 25, type from Rancho del Cielo, 5 mi. NW Gómez Farías, 3500 ft., Tamaulipas.

Distribution in Tamaulipas.—Known only from type locality.

Reithrodontomys fulvescens

Fulvous Harvest Mouse

This is the most common species of *Reithrodontomys* in Tamaulipas; it occurs in almost all parts of the state, from sea level to high up in the mountains and from the tropical forest to the desert plain.

The three subspecies in the state are *R. f. intermedius* in the northern half, *R. f. griseoflavus* in the high parts of the Sierra Madre Oriental, and *R. f. tropicalis* in the southeast. The lines between these subspecies are difficult to establish because the zones of intergradation are broad. Characters for separating the three subspecies in Tamaulipas are listed by Hooper (1952).

Reithrodontomys fulvescens griseoflavus Merriam

1901. *Reithrodontomys griseoflavus* Merriam, Proc. Washington Acad. Sci., 3:553, November 29, type from Ameca, 4000 ft., Jalisco.

1952. *Reithrodontomys fulvescens griseoflavus*, Hooper, Miscl. Publ. Mus. Zool., Univ. Michigan, 77:98, January 16.

Distribution in Tamaulipas.—Known only from Jaumave.

Only specimens from Jaumave are clearly *R. f. griseoflavus;* all others east of this locality are intergrades between *griseoflavus* and *tropicalis*, under which latter subspecies they are included. In *griseoflavus* the tail is longer in relation to the head and body, 141.2 (135-153) per cent, than in the other two subspecies that occur in Tamaulipas. The average weight of 14 males was 14 (12-16) grams.

Record of occurrence.—Specimens examined, 15, from Jaumave, 2400 ft.

Reithrodontomys fulvescens intermedius J. A. Allen

1895. *Reithrodontomys mexicanus intermedius* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 7:136, May 21, type from Brownsville, Cameron Co., Texas.

1914. *Reithrodontomys fulvescens intermedius*, A. H. Howell, N. Amer. Fauna, 36:47, June 5.

Distribution in Tamaulipas.—Northern half of state.

No specimen of this subspecies has been examined. Jones and Anderson (1958:447) reported specimens from Rancho Pano Ayuctle as *R. f. intermedius*, but here those same specimens are assigned to *R. f. tropicalis*. J. A. Allen (1891:223) recorded specimens from Santa Teresa as *Ochetodon mexicanus*. According to Hooper (1952: 142) that name was used by Allen for *R. fulvescens*. Allen's specimens from Santa Teresa are here referred to *R. f. intermedius* on geographic grounds.

Records (Hooper, 1952:108): Camargo, 200 ft.; 20 mi. S Reynosa, Charco Escondido; Matamoros, 30 ft.; 7.5 mi. S Matamoros; 29 mi. S Cd. Victoria, 800 ft.; Hacienda Santa Engracia, 800 ft.; Santa Teresa (50 mi. SW Matamoros); Sierra San Carlos (El Mulato, Tamaulipeca, 1500 ft.).

Reithrodontomys fulvescens tropicalis Davis

1944. *Reithrodontomys fulvescens tropicalis* Davis, Jour. Mamm., 25:393, December 12, type from Boca del Río, 8 km. S city of Veracruz, Veracruz.

Distribution in Tamaulipas.—Tropical area in southeastern part of state.

Most of the specimens examined of *R. fulvescens* are included in this subspecies, principally because of their reddish coloration that is characteristic of *R. f. tropicalis*. According to the original description by Davis (1944:393) this subspecies is smaller than *griseoflavus* and the posterior border of the incisive foramina terminate anterior to the plane of the molars. But, these characteristics are not found in any specimen examined from Tamaulipas and the average of external measurements is more than those given by Hooper (1952: 109) for *tropicalis*. Of all specimens from Tamaulipas, those from the vicinity of Altamira and Tampico are most nearly typical of

tropicalis. Weights of seven males and five females, from the Sierra de Tamaulipas, were, respectively, 13 (11-15), and 11 (9-14) grams.

Records of occurrence.—Specimens examined, 51: Rancho Santa Rosa, 25 km. N, 13 km. W Cd. Victoria, 1; Cd. Victoria, 3; Sierra de Tamaulipas, 10 mi. W, 2 mi. S Piedra, 1200 ft., 12; 2 km. W El Carrizo, 1; Ejido Santa Isabel, 2 km. W Pan-American Highway, 2000 ft., 14; Rancho Pano Ayuctle, 25 mi. N, 3 km. W El Mante, 300 ft., 4; Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft., 4; 6 mi. N, 6 mi. W Altamira, 2; 1 mi. S Altamira, 3; 16 km. N Tampico, 3; 7 km. N Tampico, 4.

Additional records: Hidalgo (Hooper, 1952:110); 5 mi. NE Gómez Farías, 1100 ft. (*ibid.*); La Azteca, 5 km. NNE Gómez Farías (Goodwin, 1954:11); Gómez Farías (*ibid.*); Antiguo Morelos (Hooper, 1952:110); 2 mi. W Tampico (Ingles, 1959:396).

Reithrodontomys mexicanus mexicanus (Saussure)

Mexican Harvest Mouse

1860. *R* [*eithrodon*]. *mexicanus* Saussure, Revue et Mag. Zool., Paris, ser. 2, 12:109, type from mountains of Veracruz; restricted to Mirador, Veracruz, by Hooper, Miscl. Publ. Mus. Zool., Univ. Michigan, 77:140, January 16.

1914. *Reithrodontomys mexicanus mexicanus,* A. H. Howell, N. Amer. Fauna, 36:70, June 5. Not *Reithrodontomys mexicanus* (Saussure), being instead of J. A. Allen, 1895:135, which in part equalled *Reithrodontomys fulvescens difficilis.*

Distribution in Tamaulipas.—Known from two localities, but probably occurs in all tropical areas in south part of state.

As noted before, J. A. Allen (1891:223) reported specimens from Rancho Santa Rosa as *Ochetodon mexicanus,* but he used this name for the species now known as *R. fulvescens.*

The specimen examined, previously reported by Jones and Anderson (1958:447), represents the northernmost occurrence of the species.

Records of occurrence.—One specimen examined from Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft.

Additional record: Rancho del Cielo, 3500 ft. (Hooper, 1952:144).

Peromyscus maniculatus blandus Osgood

Deer Mouse

1904. *Peromyscus sonoriensis blandus* Osgood, Proc. Biol. Soc. Washington, 17:56, March 21, type from Escalón, Chihuahua.

1909. *Peromyscus maniculatus blandus* Osgood, N. Amer. Fauna, 28:84, April 17.

Distribution in Tamaulipas.—Reported only from Miquihuana (Osgood, 1909:86).

Peromyscus melanotis J. A. Allen and Chapman

Black-eared Mouse

1897. *Peromyscus melanotis* J. A. Allen and Chapman, Bull. Amer. Mus. Nat. Hist., 9:203, June 16, type from Las Vigas, Veracruz.

Distribution in Tamaulipas.—Known only from Miquihuana (Osgood, 1909: 112).

Peromyscus leucopus texanus (Woodhouse)

White-footed Mouse

1853. *Hesperomys texana* Woodhouse, Proc. Acad. Nat. Sci. Philadelphia, 6:242, type probably from vicinity of Mason, Mason Co., Texas.

1909. *Peromyscus leucopus texanus*, Osgood, N. Amer. Fauna, 28:127, April 17.

Distribution in Tamaulipas.—Over all of state.

This is the most common species of the genus *Peromyscus* in Tamaulipas. It and *Liomys irroratus* are the two rodents most easily trapped throughout the state. In general *P. l. texanus* occurs in forested and brushy areas especially under 1200 feet in elevation, as was noted in the Sierra de Tamaulipas, where *P. l. texanus* was taken commonly at elevations of up to 1200 feet. Above this elevation the species was rare and *P. pectoralis* and *P. boylii* were more abundant than at lower elevations. The three specimens of *P. l. texanus* from 12 kilometers north and four kilometers west of Ciudad Victoria were trapped in a line of 110 traps set near tree stumps. Small burrows in the ground were noted here. The forest at this locality was composed of mesquite, ebony, acacias, a few yuccas and "nopales" (= cactuses); the ground was covered by cat claw.

Of the many young taken, 15 specimens were saved from Ejido Santa Isabel where *P. leucopus* was abundant in an area of chaparral consisting of wild "tomate," "zapote," "huizache" and "salvadora." Most of the specimens caught at this locality were taken between 7:30 and 9:30 p. m. in traps baited with a mixture of rolled oats, peanut butter and banana. Specimens from 53 kilometers north of El Limón were taken along with *Liomys irroratus;* the specimen from two kilometers west of El Carrizo was trapped near a dead mesquite log. *Reitrodontomys fulvescens* was taken in the same area. Four specimens of *P. leucopus* were taken at Rancho Pano Ayuctle, around a big pile of old firewood in an abandoned sugar mill. At the locality six miles north and six miles west of Altamira, *P. leucopus* was found in cultivated fields and along the grassy roadsides; in the vicinity of Tampico specimens were taken in an area of forested cactus-thorn. The specimen from seven kilometers south and two kilometers west of San Fernando was found in a trap set at the base of "nopal" cactus, which was surrounded by bushes and small trees (10-12 feet high).

Breeding records are as follows: Rancho Pano Ayuctle, on February 15, one female carried 2 embryos of 23 mm. in crown-rump length; Jaumave, July 26 to 29, five females, averaging 4.6 (3-6) embryos of 7 (3-15) mm., two females lactating, one on May 25 and the other on July 26; Ejido Santa Isabel, on January 20 to 25, three

females lactating; Soto la Marina, on May 16, one female lactating.

Average weights were as follows: from Jaumave four pregnant females, 28.0 (25-33), eight males, 23.4 (21-27); from the Sierra de Tamaulipas, eight females non-pregnant, 21.2 (18-26), 14 males, 22.0 (19-27); from 6 mi. N, 6 mi. W Altamira, six males, 23.5 (21-27).

All specimens examined from Tamaulipas are assigned to *P. l. texanus* because their coloration is pale. Even so the color varies some according to locality; specimens from Rancho Pano Ayuctle and the Sierra de Tamaulipas have much of the cinnamon color that is characteristic of *P. l. incensus* from farther south, but even so specimens from the two localities last mentioned are paler than those from Veracruz that are typical *incensus.*

Goldman (1942:158) reported specimens from Altamira as *P. l. incensus,* in which subspecies Ingles (1959:397) included specimens from two miles west of Tampico, but specimens examined from the same area do not differ from individuals from far north thereof; for this reason I identify specimens from these localities as *texanus.* Osgood (1909:131) and Hooper (1953:7) also referred specimens from the southern part of Tamaulipas to *texanus.* These two authors examined 156 specimens and did not find any intergradation between *texanus* and *incensus,* but to me, the cinnamon tones of specimens from Rancho Pano Ayuctle and the Sierra de Tamaulipas, suggest intergradation between the two subspecies.

Osgood's (1909:265) measurements of *P. l. texanus,* from Brownsville, Texas, and those of 40 specimens from different localities in Tamaulipas are about the same except that the anterior palatine foramina average longer in Tamaulipas. Baker's (1956:262) specimens from Coahuila, averaged larger even than Tamaulipan specimens. Another difference between Osgood's measurements and Baker's was the shorter 3.4 (3.0-3.7) maxillary tooth-row in Tamaulipan specimens.

Hooper (1953:7) recorded specimens from General Terán, as in Tamaulipas; actually this locality is in Nuevo León.

Records of occurrence.—Specimens examined, 149: 4.5 mi. S Nuevo Laredo, 1; 3 mi. SE Reynosa, 2; 7 km. S, 2 km. W San Fernando, 1; Villa Mainero, 1700 ft., 1; Rancho Santa Rosa, 25 km. N, 13 km. W Cd. Victoria, 260 m., 2; 9.5 mi. SW Padilla, 800 ft., 2; 15 mi. N Cd. Victoria, 2; 4 mi. N La Pesca, 1; Soto la Marina, 11; La Pesca, 1; 12 km. N, 4 km. W Cd. Victoria, 3; 7 km. NE Cd. Victoria, 1; Sierra de Tamaulipas, 10 mi. W, and 2 mi. S Piedra, 1200 ft., 31; Ejido Eslabones, 10 mi. W, 2 mi. S Piedra, 1200 ft., 6; Jaumave, 20; Ejido Santa Isabel, 2 km. W Pan-American Highway, 2000 ft., 15; 53 km. N El Limón, 12 km. S Río Guayalejo, 5; Rancho Pano Ayuctle, 25 mi. N El Mante, 3 km. W Highway, 300 ft., 16; Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft., 7; 8 km. W, 10 km. N El Encino, 400 ft., 3; 8 mi. N Tula, 4500 ft., 2; 2 km. W El

Carrizo, 3; 6 mi. N, 6 mi. W Altamira, 9; 16 km. N Tampico, 1; 7 km. N Tampico, 3.

Additional records (Osgood, 1909:131, unless otherwise noted): Nuevo Laredo; Mier; Camargo; near Bagdad; Sierra San Carlos (Hooper, 1953:7); Matamoros-Victoria Highway (*ibid.*); Charco Escondido (Baird, 1858:464); Hidalgo; Cd. Victoria; 10 mi. NE Zamorina (Hooper, 1953:7); Gómez Farías (Goodwin, 1954:12); Chamal (*ibid.*); Tula (Hooper, 1953:7); Antiguo Morelos (*ibid.*); Altamira (Goldman, 1942:158); 2 mi. W Tampico (Ingles, 1959:397); Tampico.

Peromyscus boylii

Brush Mouse

Specimens examined were obtained at higher elevations in the oak-tree zone of the Sierras in traps set among rocks, trees and in grassy areas. *Peromyscus boylii* was trapped in the same area as was *P. pectoralis* and no habitat distinction between the two was noted. Some behavioral differences, however, are pointed out in the account of *P. pectoralis*. Morphological differences between these two species in Tamaulipas were reported by Hooper (1952: 372).

A female taken on August 5 in the Sierra Madre Oriental carried two embryos 15 mm. in crown-rump length.

For the taxonomic status of *P. boylii* in Tamaulipas see Alvarez (1961).

Peromyscus boylii ambiguus Alvarez

1961. *Peromyscus boylii ambiguus* Alvarez, Univ. Kansas Publ. Mus. Nat. Hist., 14:118, December 29, type from Monterrey, Nuevo León.

Distribution in Tamaulipas.—Known only from the Sierra San Carlos.

Record of occurrence.—Specimens examined, 7 (UMMZ), all from La Vegonia, Sierra San Carlos.

Peromyscus boylii levipes Merriam

1898. *Peromyscus levipes* Merriam, Proc. Biol. Soc. Washington, 12:123, April 30, type from Mt. Malinche, 8400 ft., Tlaxcala.

1909. *Peromyscus boylii levipes*, Osgood, N. Amer. Fauna, 28:153, April 17.

Distribution in Tamaulipas.—Central and southern parts of state.

Weights of 19 males and 18 females from the Sierra Madre Oriental are, respectively, 25.2 (22-30) and 23.6 (20-29); weights of eight males and five females from the Sierra de Tamaulipas are 24.9 (22-32) and 29.6 (24-31).

Records of occurrence.—Specimens examined, 54: Sierra Madre Oriental, 8 mi. S, 6 mi. W Victoria, 4000 ft., 37; 5 mi. S, 3 mi. W Victoria, 1900 ft., 2; Ejido Eslabones, 10 mi. W, 2 mi. S Piedra, 1200 ft., 1; Sierra de Tamaulipas, 11 mi. W, 8 mi. S Piedra, 2000 ft., 13; 2 km. W El Carrizo, 1.

Additional records: Rancho del Cielo (Hooper, 1953:7); 3 mi. NW Acuña (*ibid.*); Rancho Viejo (Goodwin, 1954:12); Santa María (*ibid.*); Joya de Salas (*ibid.*).

Peromyscus pectoralis
White-ankled Mouse

Peromyscus pectoralis and *P. boylii* are closely related morphologically and seem to occupy the same habitat. In the Sierra Madre Oriental, according to the field notes of the collector (Heinrich, June 6 to August 5, 1953), individuals of *P. pectoralis* had a pinkish coloration on the mouth and forefeet produced by the juice of the "nopal" cactus fruit, on which obviously the mice feed, whereas only a few specimens of *boylii* were thus discolored. It was noted that *boylii* was feeding on acorns. Furthermore, the two species may differ in time of breeding; in August, males of *pectoralis* had the testes well developed when those organs were small in *boylii* collected at the same locality.

A specimen from 53 kilometers north of El Limón, was shot at a height of 10 feet on a concrete underpass. Other specimens were taken in a trap line that yielded *Peromyscus boylii, P. leucopus* and *Liomys irroratus.*

Two subspecies of *P. pectoralis* occur in Tamaulipas: *P. p. collinus* is widely distributed in the central and western parts of the state and *P. p. eremicoides* occurs only in the western "corner" of the state.

Peromyscus pectoralis collinus Hooper

1952. *Peromyscus pectoralis collinus* Hooper, Jour. Mamm., 33:372, August 19, type from San José, 2000 ft., Sierra San Carlos, 12 mi. NW San Carlos, Tamaulipas.

Distribution in Tamaulipas.—Along the central and western mountains.

A female obtained on January 21 at a place 53 kilometers north of El Limón, contained three embryos. A lactating female was taken on August 2 in the Sierra Madre Oriental. Males, as previously noted, had well-developed testes in August. The weights of 17 males and 20 females from the Sierra de Tamaulipas were, respectively, 26.6 (24-33), and 25.6 (21-31) grams.

Measurements of specimens from different localities in Tamaulipas averaged about the same, except that those of specimens from Palmillas, averaged smaller. The small size suggests intergradation between the subspecies *collinus* and *eremicoides.* The latter occurs to the west and differs from *collinus* in smaller size, more grayish coloration, completely white tarsal joint and relatively longer tail. Hooper (1952:374) reported specimens from Jaumave as intergrades between the two subspecies before mentioned and Osgood (1909: 164) identified two specimens from there as *eremicoides.* In the

present account, individuals from Palmillas and Jaumave are referred to *collinus*.

Records of occurrence.—Specimens examined, 101: 7 km. SW La Purisima, 1; Sierra Madre Oriental, 5 mi. S, 3 mi. W Victoria, 1900 ft., 12; Sierra Madre Oriental, 8 mi. S, 6 mi. W Victoria, 4000 ft., 16; Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra, 1200 ft., 36; Sierra de Tamaulipas, 3 mi. S, 14 mi. W Piedra, 1200 ft., 14; 14 mi. N, 6 mi. W Palmillas, 5500 ft., 1; Palmillas, 4400 ft., 3; 53 km. N El Limón, 12 km. S Río Guayalejo, 5; Joya Verde, 35 km. SW Victoria, 3800 ft., 9; 10 km. N, 8 km. El Encino, 400 ft., 1; 8 km. NE Antiguo Morelos, 500 ft., 3.

Additional records (Hooper, 1952:374, unless otherwise noted): Sierra San Carlos (Marmolejo, 1700 ft., San José, 2000 ft., Tamaulipeca, 1500 ft., La Vegonia, 2900 ft.); Villagran, 1300 ft.; Cd. Victoria; near Jaumave, 2400 ft.; Sierra de Tamaulipas, near Acuña, 1600 ft.; La Joya de Salas (Goodwin, 1954:12).

Peromyscus pectoralis eremicoides Osgood

1904. *Peromyscus attwateri eremicoides* Osgood, Proc. Biol. Soc. Washington, 17:60, March 21, type from Mapimi, Durango.

1909. *Peromyscus pectoralis eremicoides*, Lyon and Osgood, Bull. U. S. Nat. Mus., 62:128, January 28.

Distribution in Tamaulipas.—Known only from Miquihuana and vicinity of Tula.

The two specimens from Miquihuana are typical *P. pectoralis eremicoides* in external and cranial measurements. Specimens from nine miles southwest of Tula are characteristic of *eremicoides* in cranial measurements but the tail is shorter than usual for this subspecies, in this respect approaching *P. p. lacianus*.

Measurements.—Average and extreme measurements of 10 specimens from nine miles southwest of Tula and measurements of two males (56169, 56415) from Miquihuana are, respectively, as follows: 181.5 (173-197), 180, 197; 96.2; (87-110), 103, 113; 20.2 (19.0-21.5), 21, 21; 18.1 (16.5-19.0), 18, —; greatest length of skull, 24.8 (24.1-25.6), 25.5, 25.6; length of nasals, 9.0 (8.6-9.3), 9.3, 9.3; zygomatic breadth, 12.2 (11.7-12.8), 12.3, 12.9; interorbital constriction, 3.8 (3.7-4.0), 3.7, 3.9; length of maxillary tooth-row, 3.6 (3.5-3.7), 3.6, 3.8. Weights of the 10 specimens from nine miles southwest of Tula average 17.9 (16-24) grams.

Records of occurrence.—Specimens examined, 28: Miquihuana, 6200 ft., 2; Nicolás, 56 km. NW Tula, 5500 ft., 1; Tajada, 23 mi. NW Tula, 5200 ft., 1; 8 mi. N Tula, 4500 ft., 2; 9 mi. SW Tula, 3900 ft., 19; 17 mi. SW Tula, 3900 ft., 3.

Peromyscus melanophrys consobrinus Osgood

Plateau Mouse

1904. *Peromyscus melanophrys consobrinus* Osgood, Proc. Biol. Soc. Washington, 17:66, March 21, type from Berriozabal, Zacatecas.

Distribution in Tamaulipas.—Mexican Plateau part of state.

A lactating female caught on July 20 and four males from Miquihuana weighed, respectively, 51, and 50.2 (47-54) grams. A female, taken on July 24, 14 miles north and six miles west of Palmillas in a valley covered by mesquite and other bushes, had 3 embryos 10 mm.

in crown-rump length, and weighed 60 grams. One specimen from nine miles southwest of Tula was caught in an outcrop of rocks and two others were taken among bushes on the desert. A female on October 10 carried 4 embryos 2 mm. in crown-rump length.

Specimens of *P. melanophrys* here listed are the first to be reported from Tamaulipas. They are assigned to the subspecies *consobrinus* on the basis of dark color and because their size closely corresponds to that of the holotype. The specimen from the vicinity of Palmillas and one from Miquihuana (56408) are larger than the others and grayish.

A specimen (56413) from Miquihuana lacks all the molariform teeth. Its alveoli in one maxilla are closed and those in the opposite maxilla are more open than is normal.

Measurements.—Average and extreme measurements of four males, two females (56413, 56408) from Miquihuana, and a female (56414) from 14 miles north and 6 miles west of Palmillas, are, respectively, as follows: total length (two males only), 249, 245, 265, 247, 280; length of tail vertebrae (two males only), 137, 134, 141, 131, 157; length of hind foot, 26.7 (26-27), 27, 27, 27; ear from notch, 23.7 (23-24), 25, 24, 25; greatest length of skull, 30.3 (29.5-31.0), 31.2, 31.8, 32.2; interorbital constriction, 4.8 (4.7-4.9), 4.9, 4.8, 5.0; length of palatine slits, 6.6 (6.2-6.8), 6.9, 6.9, 6.8; length of diastema, 8.1 (8.0-8.3), —, 8.5, 8.5; alveolar length of maxillary tooth-row, 4.5 (4.3-4.7), —, 4.3, 4.6.

Records of occurrence.—Specimens examined, 16: Miquihuana, 6200 ft., 6; 14 mi. N, 6 mi. W Palmillas, 5500 ft., 1; Nicolás, 56 km. NW Tula, 5500 ft., 6; 9 mi. SW Tula, 3900 ft., 3.

Peromyscus difficilis petricola Hoffmeister and de la Torre

Zacatecan Deer Mouse

1959. *Peromyscus difficilis petricola* Hoffmeister and de la Torre, Proc. Biol. Soc. Washington, 72:167, November 4, type from 12 mi. E San Antonio de las Alazanas, 9000 ft., Coahuila.

Distribution in Tamaulipas.—Westernmost part of state.

The three specimens from Miquihuana were collected among rocks and stumps, in an oak forest. The specimens from 20 miles north of Tula were collected after midnight on a hillside covered mainly with juniper brush. A female (October 11) carried 3 embryos 26 mm. in crown-rump length.

Records of occurrence.—Specimens examined, 6: Miquihuana, 8500 ft., 3; 20 mi. N Tula, 5800 ft., 3.

Peromyscus ochraventer Baker

El Carrizo Deer Mouse

1951. *Peromyscus ochraventer* Baker, Univ. Kansas Publ., Mus. Nat. Hist., 5:213, December 15, type from 70 km. (by highway) S Ciudad Victoria, 6 km. W Pan-American Highway at El Carrizo, Tamaulipas.

Distribution in Tamaulipas.—Vicinity of the type locality.

The series of specimens examined was the same used by the original describer of the species. He (1951:214-215) pointed out that the mice were taken in junglelike forest among rocks and adjacent to logs. Burrows extended beneath large blocks of limestone, and each burrow where a mouse was caught was marked by a pile of excavated earth resembling a tiny mound left by a pocket gopher. These burrows were at an elevation of approximately 2800 feet above sea level on the steep sides of a small hill in an area where the vegetation was intermediate between that of the arid and humid subdivisions of the tropical region. Each of two females, captured on January 13, carried five placental scars; one of the females was lactating.

Records of occurrence.—Specimens examined, 24, from the type locality.

Additional records (Goodwin, 1954:12): Gómez Farías; Rancho del Cielo; Joya de Salas.

Baiomys taylori taylori (Thomas)

Northern Pygmy Mouse

1887. *Hesperomys (Vesperimus) taylori* Thomas, Ann. Mag. Nat. Hist., ser. 5, 19:66, January, type from San Diego, Duval Co., Texas.

1907. *Baiomys taylori* Mearns, U. S. Nat. Mus., Bull. 56:381, April 13.

Distribution in Tamaulipas.—All of state, except southwestern desert part.

The species of this genus have been revised recently by Packard (1960) and the specimens from Tamaulipas are arranged according to his systematic findings. The weight of 35 specimens labeled with reference to Altamira are 7.6 (6.0-9.0) grams; 15 from Jaumave weigh 6.9 (6.0-9.0) grams. Pregnant females were collected as follows: February 22, Ejido Santa Isabel, 3 (embryos x 4 mm. in crown-rump length); March 2, Rancho Pano Ayuctle, 6 x 16; July 9, six miles north and six miles west of Altamira, 1 x 4; July 28 and 29, Jaumave, 2 x 8 and 3 x 9. The average number of embryos was 2.8 (1-5).

Records of occurrence.—Specimens examined, 83: 4 mi. N La Pesca, 1; Cd. Victoria, 3; Jaumave, 2400 ft., 17; Ejido Santa Isabel, 2 km. W Pan-American Highway, 2000 ft., 7; Rancho Pano Ayuctle, 25 mi. N, 3 km. W El Mante, 300 ft., 4; Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft., 1; Río Sabinas, 8 km. N El Encino, 400 ft., 1; 2 km. W El Carrizo, 2; 6 mi. N, 6 mi. W Altamira, 33; 5 mi. N, 5 mi. W Altamira, 4; 1 mi. S Altamira, 3; 16 km. N Tampico, 4; 10 mi. NW Tampico, 1; 7 mi. S Altamira, 1; 1 km. N Tampico, 1.

Additional records (Packard, 1960:654): Camargo; Charco Escondido, 20 mi. S Reynosa; Matamoras (= Matamoros); Hidalgo; 29 mi. N Cd. Victoria; Antiguo Morelos.

Onychomys leucogaster longipes Merriam

Northern Grasshopper Mouse

1889. *Onychomys longipes* Merriam, N. Amer. Fauna, 2:1, October 30, type from Concho County, Texas.

1913. *Onychomys leucogaster longipes*, Hollister, Proc. Biol. Soc. Washington, 26:216, December 20.

Distribution in Tamaulipas.—From Ciudad Victoria northward.

Only a young female was examined; she weighed 22 grams and extends the known range 59 miles eastward from Ciudad Victoria.

Record of occurrence.—One specimen examined from Soto la Marina, 500 ft.

Additional records (Hollister, 1914:253): Camargo; Reynosa; [Cd.] Victoria.

Onychomys torridus subrufus Hollister

Southern Grasshopper Mouse

1914. *Onychomys torridus subrufus* Hollister, Proc. U. S. Nat. Mus., 47:472, October 29, type from Miquihuana, Tamaulipas.

Distribution in Tamaulipas.—West of Sierra Madre Oriental.

The six specimens examined were collected in the desert area west of the Sierra Madre Oriental. At Nicolás a trap set in front of a hole held one specimen, and another was trapped beneath a brush fence that inclosed a cornfield. *Dipodomys merriami* and *Perognathus penicillatus* also were trapped beneath the fence.

A subadult from Nicolás is slightly larger (see measurements) than either of two subadults from four miles north of Jaumave and an old specimen from eight miles north of Tula, except in the interorbital constriction, which is narrower. Nevertheless measurements of Tamaulipan *Onychomys torridus* resemble those given by Hollister (1914:483) for *O. t. subrufus*. A specimen from Nicolás is also darker than other individuals examined.

A female taken on July 15, four miles north of Jaumave, was lactating.

Measurements.—Measurements of a female from Nicolás, a male from eight miles north of Tula, and a female and a male from four miles north of Jaumave are as follows: 158, 147, 145, 144; 59, 58, 55, 55; 22, 21, 22, 22; 21, 20.5, 18, 18; condylobasal length, 24.4, 23.1, 23.9, 23.7; interorbital constriction, 4.1, 4.4, 4.3, 4.5; length of nasals, 10.6, 10.5, 10.5, 10.1; length of maxillary toothrow, 3.8, 3.6, 3.7, 3.7; breadth of braincase, 11.8, 11.3, 11.3, 11.0; weight in grams, 32.5, 26.0, 25.0, 25.0.

Records of occurrence.—Specimens examined, 6: 4 mi. N Jaumave, 2; Nicolás, 56 km. NW Tula, 5500 ft., 2; Tajada, 23 mi. NW Tula, 5200 ft., 1; 8 mi. N Tula, 4500 ft., 1.

Additional records (Hollister, 1914:475): Miquihuana; Jaumave.

Sigmodon hispidus

Hispid Cotton Rat

This species, as is known, is active by day and by night. It occurs mainly in grassy areas and most of the specimens examined were trapped there. But, one mile east of La Pesca, specimens were taken on a beach having sparse grass. *Neotoma micropus* and *Spermophilus spilosoma*, but no smaller rodents, were taken there. Also, many crabs were found in the traps. Possibly only the rela-

tively large rodents are able to compete successfully with the crabs. The specimen from one kilometer east of El Barretal was caught in a rat-trap set in front of small hole in a fence of dead brush that surrounded a cornfield. The area outside the fence supported mesquite and ebony trees (10-12 feet high) and the ground was covered with cat claw. Six miles north and six miles west of Altamira, the two young specimens were taken on a small grassy island surrounded by mud.

According to natives, *Sigmodon* injures corn and sugar cane. Probably other species of rodents are responsible for some or all of such damage since other kinds of rodents were taken in the same areas.

Dice (1937:245) reported females from the Sierra San Carlos that carried 8 embryos of 18 mm., 5 x 33, 7 embryos very small, and 8 x 20. Females were collected on July 22, 29, and 30.

Sigmodon hispidus berlandieri Baird

1855. *Sigmodon berlandieri* Baird, Proc. Acad. Nat. Sci. Philadelphia, 7:333, type from Río Nazas, Coahuila.

1902. *Sigmodon hispidus berlandieri*, V. Bailey, Proc. Biol. Soc. Washington, 15:106, June 2.

Distribution in Tamaulipas.—From Jaumave and Llera to north.

This subspecies is distinguished from *S. h. toltecus* by larger size and paler, grayish coloration.

Baker (1951:216) reported a specimen from 35 kilometers north and 10 kilometers west of Ciudad Victoria (= 1 km. E El Barretal) as *S. h. toltecus*. Comparison of its skull with those from the vicinity of Altamira (*S. h. toltecus*) and those from Jaumave (*S. h. berlandieri*) shows that the skull from El Barretal closely resembles those

Table 3.—Data on Reproduction.

Locality	Date	Embryos	Size in mm.
4 mi. N La Pesca	May 26	4	30
Sierra de Tamaulipas	June 10	3	10
Sierra de Tamaulipas	June 11	4	10
Sierra de Tamaulipas	June 20	2	20
Ciudad Victoria	July 12	5	5
Jaumave	July 28	4	14
Jaumave	July 29	6	25
San Fernando	August 30	7	20
San Fernando	August 31	8	11
Vicinity of Nuevo Laredo	November 15	3	5
Vicinity of Nuevo Laredo	November 16	5	2

from Jaumave, in having the zygomatic arches more nearly parallel and the braincase more rounded than in skulls from Altamira. Therefore the specimen from the vicinity of El Barretal is here assigned to *S. h. berlandieri.*

Records of occurrence.—Specimens examined, 64: 4½ mi. S Nuevo Laredo, 600 ft., 1; 10 mi. S, 11 mi. E Nuevo Laredo, 8; San Fernando, 180 ft., 8; 4 mi. N La Pesca, 10; 3 mi. N La Pesca, 1; 1 mi. E La Pesca, 3; Soto la Marina, 500 ft., 1; 36 km. N, 10 km. W Cd. Victoria, 1 km. E El Barretal, Río Purificación, 1; Cd. Victoria, 1; 2 km. W Pan-American Highway (12 km. S Llera), Ejido Santa Isabel, 2000 ft., 1; Jaumave, 2400 ft., 29.

Additional records: Matamoros (Baird, 1858:506); Sierra San Carlos (El Mulato, Tamaulipeca, San Miguel) (Dice, 1937:254); Mesa de Llera (Hooper, 1953:9); Tamaulipas [state?] (Baird, 1858:506).

Sigmodon hispidus solus Hall

1951. *Sigmodon hispidus solus* Hall, Univ. Kansas Publ., Mus. Nat. Hist., 5:42, October 1, type from island 88 mi. S, 10 mi. W Matamoros, Tamaulipas.

Distribution in Tamaulipas.—Known only from two specimens from the type locality.

Sigmodon hispidus toltecus (Saussure)

1860. [*Hesperomys*] *toltecus* Saussure, Revue et Mag. Zool., Paris, ser. 2, 12:98, type from mountains of Veracruz [probably near Mirador, Dalquest, Louisiana State Univ. Studies, Biol. Sci. Series, 1:163, December 28, 1953].

1902. *Sigmodon hispidus toltecus,* V. Bailey, Proc. Biol. Soc. Washington, 15:110, June 2.

Distribution in Tamaulipas.—Tropical region in southern part of state. The specimen reported by Baker (1951:216) from one mile east of El Barretal is here referred to *S. h. berlandieri.*

Records of occurrence.—Specimens examined, 69: Sierra de Tamaulipas, 10 mi. W, 2 mi. S Piedra, 1200 ft., 24; Sierra de Tamaulipas, 11 mi. W, 8 mi. S Piedra, 2000 ft., 1; Rancho Pano Ayuctle, 25 mi. N El Mante, 3 km. W highway, 300 ft., 3; Rancho Pano Ayuctle, 6 mi. N Gómez Farías, 300 ft., 3; 8 km. W, 10 km. N El Encino, 400 ft., 2; 2 km. W El Carrizo, 2100 ft., 20; 6 mi. N, 6 mi. W Altamira, 8; 6 mi. N, 4 mi. W Altamira, 1; 5 mi. N, 5 mi. W Altamira, 3; 1 mi. S Altamira, 1; 16 km. N Tampico, 3.

Additional records: Rancho del Cielo, 15 to 20 mi. S Mesa de Llera (Hooper, 1953:9); Cd. Mante (Ingles, 1959:398); Tampico (Booth, 1957:15).

Neotoma albigula subsolana Alvarez

White-throated Woodrat

1962. *Neotoma albigula subsolana* Alvarez, Univ. Kansas Publ. Mus. Nat. Hist., 14:141, April 30, type from Miquihuana, 6400 ft., Tamaulipas.

Distribution in Tamaulipas.—Western side of Sierra Madre Oriental.

At Nicolás specimens were taken in traps set along a thorn fence and at Tajada two specimens were trapped along a rock wall. At other places some specimens were brought in by natives who captured the rats by tearing apart their houses.

Five females taken on October 18 at Nicolás carried embryos (one to two per female), which averaged 22.2 (11-45) mm. in crown-

rump length. Another female, taken nine miles southwest of Tula on October 13, carried 2 embryos that were 35 mm. in crown-rump length. The average weight of the five pregnant females was 196.7 (183-207) grams. The average weights of nine adult males and six non-pregnant females from Miquihuana were, respectively, 215.6 (175-250) and 162.5 (155-175) grams.

Records of occurrence.—Specimens examined, 51: Miquihuana, 6400 ft., 22; Joya Verde, 35 km. SW Cd. Victoria (on Jaumave Road) 3800 ft., 2; Nicolás, 56 km. NW Tula, 5500 ft., 10; Tajada, 23 mi. NW Tula, 5200 ft., 2; 9 mi. SW Tula, 3900 ft., 15.

Additional record: Jaumave (Goldman, 1910:37).

Neotoma angustapalata Baker

Tamaulipas Wood Rat

1951. *Neotoma angustapalata* Baker, Univ. Kansas Publ., Mus. Nat. Hist., 5:217, December 15, type from 70 km. by highway S Ciudad Victoria, and 6 km. W Pan-American highway at El Carrizo, Tamaulipas.

Distribution in Tamaulipas.—Southern part of state; presently known from two localities.

Baker (1951:218) reported that specimens from the type locality were taken in crevices among rocks on a small hillside that supported a sparse cover of vegetation growing from a deep layer of humus. The specimen from eight kilometers west and 10 kilometers north of El Encino was shot about 40 yards from the entrance to a large cave, but no sign of wood rats were found there. Hooper (1953:9) reported that *N. angustapalata* occupied caves at Rancho del Cielo, where a female with two nursing young was taken.

When Baker (*op. cit.*) described *Neotoma angustapalata* on the basis of two specimens from El Carrizo, he assigned the species to the *N. mexicana* group because of the deep anterointernal re-entrant angle of M1. The deep angle found in *N. mexicana* differs markedly from the typical condition in either *N. micropus* or *N. albigula.* Study of the cranial characters and bacula of specimens of *N. micropus* and *N. angustapalata* tends to corroborate the statement of Hooper (1953:10), who commented on the taxonomic relationships of *N. angustapalata* as follows: "It should be pointed out that all characters considered . . . the specimens [*angustapalata*] appear to be large, deeply pigmented examples of the species *N. micropus* notwithstanding the deep anterior fold in M1. The presence of that deep fold is far from an absolute character in the *mexicanus* [*sic*] group."

My study of 48 crania of *N. micropus* from Tamaulipas reveals that the depth of the re-entrant angle of M1 is extremely variable, from almost absent in some individuals to deep (as in *angustapalata*)

in others. Four specimens, one (56958) from the Sierra de Tamaulipas and three (56960, 56965, 56966) from the vicinity of Altamira, have the re-entrant angle as deep as in the holotype and topotype of *angustapalata*.

Comparison of the bacula of the holotype and one topotype of *angustapalata* with 15 bacula of *N. micropus* reveal that on the average the baculum of *angustapalata* differs from that of *micropus* in being longer, and narrower at the base (greatest length, 7.1, width at base, 3.4 mm., in the topotype). One specimen of *N. micropus littoralis* from the vicinity of Altamira, however, has a baculum of the same shape as in *angustapalata* (this same specimen is one of the three from there in which the re-entrant angle of the M1 is deep). The shape of the baculum among specimens of *micropus* is highly variable and bacula of specimens from different localities frequently are slightly different (see Fig. 5).

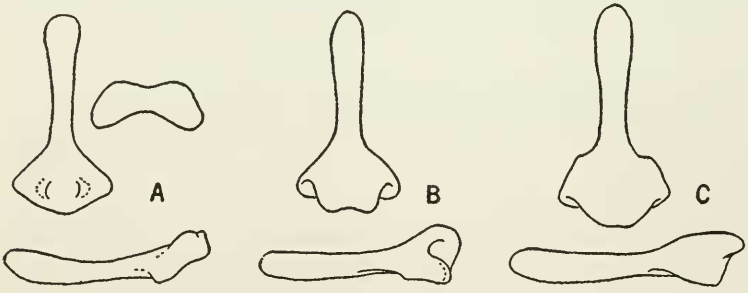

Fig. 5. Bacula of *Neotoma*. All × 4.
A, *Neotoma angustipalata* (topotype, 37062).
B, *Neotoma micropus micropus* (4 mi. SW Nuevo Laredo, 89147).
C, *Neotoma micropus littoralis* (Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra, 56957).

The known distributions of *N. micropus* and *N. angustapalata* do not overlap (neither does the distribution of *N. albigula* overlap with either in Tamaulipas). The four specimens of *N. micropus* having the deep re-entrant angle in M1 are from localities near where the ranges of *angustapalata* and *micropus* probably meet. This could be interpreted in two ways: (1) these four specimens can be regarded as intergrades between *angustapalata* and *micropus*, in which case the former species should be placed as a subspecies of the latter. Or the four specimens, which were collected along with other specimens that lack deep re-entrant angles in the M1, can be assigned, on the basis of the deep angle, to *angustapalata*, in which case the species *micropus* and *angustapalata* would be in

part sympatric. Until more material from critical areas is available for study, I continue to recognize *angustapalata* as a monotypic species. I agree with Hooper that it is closely related to *N. micropus*.

Measurements.—A female (58865) from 8 km. west and 10 km. north of El Encino, measured as follows: 404; 198; 41; 32; greatest length of skull, 49.7; basilar length, 40.8; zygomatic breadth, 25.9; length of nasals, 18.8; length of incisive foramina, 10.8; length of maxillary tooth-row, 9.9; greatest breadth of interpterygoid space, 4.0.

Records of occurrence.—Specimens examined, 3: 8 km. W, 10 km. N El Encino, 400 ft., 1; type locality, 2.

Neotoma micropus
Southern Plains Wood Rat

Most of the specimens examined were trapped in brushy areas. On the Sierra de Tamaulipas, wood rats were caught in steel traps set near or between rocks. In the vicinity of La Pesca, specimens were trapped on the beach where *Spermophilus spilosoma* and *Sigmodon hispidus* were taken also.

Two females, obtained on May 19 and June 10 at Soto la Marina and on the Sierra de Tamaulipas, respectively, each carried 2 embryos that were 40 mm. in crown-rump length. Dice (1937:254) reported that two females collected on July 24 and August 16 on the Sierra San Carlos each carried 2 embryos that ranged from 34 to 36 mm. in crown-rump length.

Neotoma micropus occurs throughout the Tamaulipan Biotic Province and is represented in Tamaulipas by two subspecies, each of which has its type locality in the state. Intergradation between the two takes place at Soto la Marina.

Neotoma micropus littoralis Goldman

1905. *Neotoma micropus littoralis* Goldman, Proc. Biol. Soc. Washington, 18:31, February 2, type from Altamira, 100 ft., Tamaulipas.

Distribution in Tamaulipas.—From the Sierra de Tamaulipas southward.

Weight of two males and three non-pregnant females was 248, 254, 185, 210, 240 grams, respectively.

Records of occurrence.—Specimens examined, 14: Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra, 1200 ft., 6; 6 mi. N, 6 mi. W Altamira, 8.

Additional record: Altamira (Goldman, 1910:29).

Neotoma micropus micropus Baird

1855. *Neotoma micropus* Baird, Proc. Acad. Nat. Sci. Philadelphia, 7:333, April, type from Charco Escondido, Tamaulipas.

Distribution in Tamaulipas.—From Soto la Marina northward.

The weight of five males and four females from Soto la Marina averaged, respectively, 256.4 (210-317) and 233.0 (195-274) grams.

A specimen (56924) from La Pesca differs from all other specimens of *N. micropus* examined in being smaller, having a conspicuously shorter rostrum, broader intraorbital canal, and lower broader braincase. External measurements of this specimen are as follows: 347; 155; 39; —. Its cranial measurements are: greatest length, 44.8; basilar length, 34.3; zygomatic breadth, 23.6; interorbital constriction, 6.2; incisive foramina, 6.5; length of maxillary tooth-row, 8.7; width of mesopterygoid fossa, 4.1.

Records of occurrence.—Specimens examined, 58: 4 mi. SW Nuevo Laredo, 900 ft., 14; 4½ mi. S Nuevo Laredo, 1; 3 mi. SE Reynosa, 1; 3 mi. S Matamoros, 2; 33 mi. S Washington Beach, 1; San Fernando, 180 ft., 1; 7 km. S, 2 km. W San Fernando, 2; 12 mi. NW San Carlos, 1300 ft., 4; 9½ mi. SW Padilla, 800 ft., 3; 3 mi. N Soto la Marina, 3; Soto la Marina, 500 ft., 12; 4 mi. N La Pesca, 3; 1 mi. E La Pesca, 1; La Pesca, 2; 3 mi. NE Guemes, 1; 7 mi. NE Cd. Victoria, 1; Cd. Victoria, 6.

Additional records (Goldman, 1910:28, unless otherwise noted): Nuevo Laredo; 10 mi. S Nuevo Laredo (Booth, 1957:15); Camargo; Matamoros; Bagdad; 40 mi. S Matamoros (Hooper, 1953:9); Sierra San Carlos (El Mulato, Tamaulipeca) (Dice, 1937:254); San Fernando (J. A. Allen, 1891:224); Forlón.

Microtus mexicanus subsimus Goldman

Mexican Vole

1938. *Microtus mexicanus subsimus* Goldman, Jour. Mamm., 19:494, November 14, type from Sierra Gaudalupe, southeastern Coahuila.

Distribution in Tamaulipas.—Reported only from mountains near Miquihuana (Goldman, 1938:495).

Canis latrans

Coyote

In Tamaulipas two and possibly three subspecies of *Canis latrans* occur. *C. l. texensis* is known only from the northwesternmost part of the state, and *N. l. microdon* occurs from Camargo south to Nicolás. Hall and Kelson (1959:845) guessed that *C. l. cagottis* would be found in the southern third of the state; as yet specimens from there have not been obtained and the subspecific identity of the coyotes there, if any are present, remains in doubt.

Canis latrans microdon Merriam

1897. *Canis microdon* Merriam, Proc. Biol. Soc. Washington, 11:29, March 15, type from Mier, on Río Grande, Tamaulipas.

1932. *Canis latrans microdon*, Nelson, Proc. Biol. Soc. Washington, 45:224, November 26.

Distribution in Tamaulipas.—Probably state-wide, reported only from the northern half of the state.

Three specimens were examined. One is a pup from the vicinity of Padilla which is assigned to this subspecies on geographic grounds. The other two are skins, collected at Nicolás by natives,

who deceived the collector by providing dog skulls with the coyote skins. These two specimens are referred to *C. l. microdon* on the basis of their dark color and dusky shading on the throat and chest. One has a rufous over-all color and the other is ochraceous yellowish. This difference in color suggests intergradation at this place between *C. l. microdon* that ranged to the northeast, *C. l. cagottis* to the south, and probably with *C. l. impavidus* distributed to the west.

Records of occurrence.—Specimens examined, 3: 9½ mi. SW Padilla, 800 ft., 1; Nicolás, 53 km. N Tula, 2.

Additional record: Camargo (Jackson, 1951:305); 20 mi. W Reynosa (Ingles, 1959:401); Matamoros (Jackson, 1951:305); Bagdad (*ibid.*); Sierra San Carlos (San Miguel, El Mulato) (Dice, 1937:251).

Canis latrans texensis V. Bailey

1905. *Canis nebrascensis texensis* V. Bailey, N. Amer. Fauna, 25:175, October 24, type from 45 mi. SW Corpus Christi at Santa Gertrudis, Kleberg Co., Texas.

1932. *Canis latrans texensis* V. Bailey, N. Amer. Fauna, 53:312, March 11.

Distribution in Tamaulipas.—Extreme northwest, known only from Nuevo Laredo (Jackson, 1951:279).

Canis lupus monstrabilis Goldman
Gray Wolf

1937. *Canis lupus monstrabilis* Goldman, Jour. Mamm., 18:42, February 11, type from 10 mi. S Rankin, Upton Co., Texas.

Distribution in Tamaulipas.—Probably extinct, recorded only from Matamoros (Goldman, 1944:468).

On the maps of distribution of *C. l. monstrabilis* published by Leopold (1959:400) and Baker and Villa (1960:370), Tamaulipas is included in the region in which the wolf is considered to be extinct.

Urocyon cineroargenteus scottii Mearns
Gray Fox

1891. *Urocyon virginianus scottii* Mearns, Bull. Amer. Mus. Nat. Hist., 3:236, June 5, type from Pinal Co., Arizona.

1895. *Urocyon cinereo-argenteus scottii*, J. A. Allen, Bull. Amer. Mus. Nat. Hist., 7:253, June.

Distribution in Tamaulipas.—All of state in suitable habitats.

The specimen from the Sierra Madre Oriental was obtained by a collector who used a rabbit call. Leopold (1959:408) reported that the highest elevation [about 2800 feet] at which he found gray fox in México was at Hacienda de Acuña, in the Sierra de Tamaulipas, where "dense, brushy draws and oak openings made ideal habitat." At this place Leopold saw, in early August, a family of

foxes, four well-grown young and their parents. Dice (1937:250) reported *U. c. texensis* (a junior synonym of *U. c. scottii*), as abundant in the Sierra San Carlos.

The six specimens examined do not present any significant difference in size and shape of the skull from specimens of *scottii* from Arizona, except that one skull from the Sierra de Tamaulipas is smaller than the others, suggesting intergradation between the subspecies *scottii* and *tropicalis* from farther south.

Records of occurrence.—Specimens examined, 6: 2 mi. W San Fernando, 180 ft., 1; 15 km. W Rancho Santa Rosa, Sierra Madre Oriental, 4500 ft., 1; Ejido Santa Isabel, 2000 ft., 1; Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra, 1200 ft., 2; Joya Verde, 35 km. SW Victoria, 3800 ft., 1.

Additional records: Near Marmolejo, San Carlos Mts. (Dice, 1937:250); Hacienda Acuña, Sierra de Tamaulipas (Leopold, 1959:408, only seen); La Joya de Salas (Goodwin, 1954:14).

Ursus americanus eremicus Merriam

Black Bear

1904. *Ursus americanus eremicus* Merriam, Proc. Biol. Soc. Washington, 17:154, October 6, type from Sierra Gaudalupe, Coahuila.

Distribution in Tamaulipas.—Probably in high and remote parts of the Sierra Madre Oriental; recorded only from Agua Linda (Goodwin, 1954:14).

Bassariscus astutus flavus Rhoads

Ringtail

1894. *Bassariscus astutus flavus* Rhoads, Proc. Acad. Nat. Sci. Philadelphia, 45:417, January 30, type from Texas, exact locality unknown.

Distribution in Tamaulipas.—Western half of state.

The two specimens examined provide the second record of this species in Tamaulipas; they were shot in the bottom of an arid canyon. One animal was about 30 feet up from the ground in an oak tree, and the other was along a small arroyo containing pools of water.

From Rhoads' paper (1893:416-417) on the genus *Bassariscus* it would seem that *B. astutus flavus* differs from *B. a. astutus* in smaller size, especially of the skull, shorter tail (shorter than head and body in *flavus* and longer than head and body in *astutus*) and the presence of fulvous color. Comparison of 10 specimens of *B. a. flavus* from Coahuila and Texas with two of *B. a. astutus* (Distrito Federal, 1; Las Vigas, Veracruz, 1) from central México reveals that the skulls do not differ qualitatively and that the skull of *flavus* tends to be smaller and relatively wider, but that there is overlap in size. In all *flavus* that I measured and in the two adults of *astutus* the tail is shorter than the head and body. The only real difference is the color; ringtails from Texas are deep fulvous instead of grayish as is

astutus from the Distrito Federal and Veracruz. But the specimen from Veracruz has much fulvous and on the other hand specimens from Coahuila are more grayish than those from Texas.

The two specimens from Tamaulipas can be assigned to either subspecies *astutus* or *flavus* with almost equal propriety. Here they are referred to *B. a. flavus* on the basis of their relatively small skull, short tail, and presence of some fulvous color.

Measurements.—Measurements of female and male (60239, 60240), both adult, from Joya Verde, are, respectively: 745, 760; 370, 385; 70, 75; 47, 56; greatest length of skull (excluding incisors), 81.9, 83.1; zygomatic breadth, 46.1, 51.9; interorbital constriction, 16.3, 16.3; postorbital constriction, 19.5, 18.5; breadth of braincase, 33.7, 36.6; length of maxillary tooth-row, 31.5, 32.0; breadth across postorbital processes (tip to tip), 25.3, 26.8.

Records of occurrence.—Two specimens examined from Joya Verde, 35 km. SW Victoria, 3800 ft.

Additional record: Joya de Salas (Goodwin, 1954:14).

Procyon lotor

Racoon

Racoons occur all through the state. The one specimen examined was shot about 11:00 p. m. in a cypress tree. Its mouth contained fresh corn. The animal was notably fat and weighed 11 pounds. According to the natives the racoons do much damage in cornfields.

Procyon lotor fuscipes Mearns

1914. *Procyon lotor fuscipes* Mearns, Proc. Biol. Soc. Washington, 27:63, March 20, type from Las Moras Creek, 1011 ft., Fort Clark, Kinney Co., Texas.

Distribution in Tamaulipas.—Practically all of state, except western part.

Records (Goldman, 1950:51, unless otherwise noted): Camargo; Matamoros; Bagdad; Marmolego; Camp 2 (= 73 mi. S Washington Beach, Selander *et al.*, 1962:338, recorded only to species); Gómez Farías (Goodwin, 1954:14); Altamira.

Procyon lotor hernandezii Wagler

1831. *Pr* [*ocyon*]. *hernandezii* Wagler, Isis von Oken, 24:514, type from Tlalpan, Valley of Mexico.

1890. *Procyon lotor hernandezi*, J. A. Allen, Bull. Amer. Mus. Nat. Hist., 3:176, December 10.

Distribution in Tamaulipas.—Western part of state; known only from Rancho Santa Rosa.

The specimen examined is identified as *P. l. hernandezii* because the animal differs from specimens of *P. l. fuscipes* from southern Texas and Coahuila in the same way that Goldman (1950:50) noted that *P. l. hernandezii* differs from *P. l. fuscipes.* For example, in the specimen from Rancho Santa Rosa the interorbital region is lower, the braincase is less depressed near the fronto-parietal suture, the postorbital process is longer and more pointed, and the upper

carnassial is longer. The color is the same as in specimens of *fuscipes* from Texas except that the postauricular spot is smaller, and the ground color is slightly more grayish. The median dorsal area is black, forming a longitudinal band about 3 cm. wide.

Record of occurrence.—One specimen examined from Rancho Santa Rosa, 25 km. N, 13 km. W Cd. Victoria.

Nasua narica molaris Merriam

Coati

1902. *Nasua narica molaris* Merriam, Proc. Biol. Soc. Washington, 15:68, March 22, type from Manzanillo, Colima.

Distribution in Tamaulipas.—Over all of state.

A male and female, both adults, from the same locality in the Sierra de Tamaulipas weighed, respectively, 3,150 grams and 4,836 grams. Three young from the same place weighed 2,250, 2,250, and 2,650 grams.

Records of occurrence.—Specimens examined, 7: Sierra de Tamaulipas, 10 mi. W, 2 mi. S Piedra, 1200 ft., 5; Rancho Pano Ayuctle, 25 mi. N El Mante, 3 km. W Pan-American Highway, 2200 ft., 1; 2 km. W El Carrizo, 1.

Additional records: Sierra San Carlos (San José, El Mulato) (Dice, 1937: 249); Soto la Marina (Goldman, 1942:81); Cd. Victoria (*ibid.*); 10 mi. NE Zamorina (Hooper, 1953:3); 3 mi. NW Acuña (*ibid.*); 19 km. SW Mante (Davis, 1944:381).

Potos flavus aztecus Thomas

Kinkajou

1902. *Potos flavus aztecus* Thomas, Ann. Mag. Nat. Hist., ser. 7, 9:268, April, type from Atoyac, Veracruz.

Distribution in Tamaulipas.—Uncertain; one specimen was seen by Leopold (1959:437) near Acuña.

Mustela frenata

Long-tailed Weasel

This species occurs in practically all of the state, but as in most other areas actual records are few; only two specimens, both males, have been examined. One was taken at Jaumave, in a steel-trap baited with fresh egg. It weighed 325 grams. The other was taken in the vicinity of Altamira and weighed 434 grams.

Two subspecies have been reported from Tamaulipas; *Mustela frenata frenata* that occurs in the central and northern parts of the state and *M. f. tropicalis* that occurs in the tropical area in the southern part of the state.

Mustela frenata frenata Lichtenstein

1831. *Mustela frenata* Lichtenstein, Darstellung neuer oder wenig bekannter Säugethiere . . ., pl. 42 and corresponding text, unpaged, type from Ciudad México, México.

1877. *Putorius mexicanus* Coues, Fur-bearing animals, U. S. Geol. Surv. Territories, Misc. Publ., 8:42, a *nomen nudum* [cited by Coues in synonmy as "*Putorius mexicanus*, Berlandier, MMS. ic. ined. 4 (Tamaulipas and Matamoras)"].

Distribution in Tamaulipas.—Central and northern parts of state.

The specimen from Jaumave is clearly *M. f. frenata*, but the other from northwest of Altamira has many characters of the subspecies *M. f. tropicalis* and is an intergrade between the two subspecies. In cranial features and in measurements the animal is like *frenata*. For example: least width of palate more than length of P4; distance between anterior border of auditory bulla and foramen ovale equal to the width of four (including I3) upper incisors; depth of tympanic bulla less than distance between it and foramen ovale; length of tail amounting to 82 per cent of length of head and body. The coloration is more nearly like that of *tropicalis*. For example, the region between the ears and the region behind the ears as far as the shoulders is almost black; hairs of the soles of the forefeet are of the same color as in *tropicalis*. But, width of the whitish underparts amounts to 53 per cent of the circumference of the body; in this respect the specimen is like *frenata*. I refer the specimen to *frenata* because, to me, it is slightly more nearly like it.

Measurements.—The male from 6 mi. N, 6 mi. W Altamira affords measurements as follows: 500; 226; 53; 23; basilar length (Hensel), 49.5; breadth of rostrum, 14.3; interorbital constriction, 11.9; orbitonasal length, 15.2; mastoid breadth, 27.2; zygomatic breadth, 32.4; tympanic bullae, length, 16.8; breadth, 7.5; length of m1, 5.7; P4, lateral length, 5.4, medial, 5.8; M1, breadth, 4.6, length, 2.4; depth of skull at anterior edge of basioccipital, 14.7.

Records of occurrence.—Specimens examined, 2: Jaumave, 2400 ft., 1; 6 mi. N, 6 mi. W Altamira, 1.

Additional records (Hall, 1951:347): Matamoros; Miquihuana.

Mustela frenata tropicalis (Merriam)

1896. *Putorius tropicalis* Merriam, N. Amer. Fauna, 11:30, June 30, type from Jico, Veracruz.

Distribution in Tamaulipas.—Tropical area in south part of state; reported only from 50 mi. south of Ciudad Victoria (Hall, 1951:366).

Eira barbara senex (Thomas)

Tayra

1900. *Galictis barbara senex* Thomas, Ann. Mag. Nat. Hist., ser. 7, 5:146, January, type from Hacienda Tortugas, approximately 600 ft., Jalapa, Veracruz.

1951. *Eira barbara senex*, Hershkovitz, Fieldiana-Zool., 31:561, July 10.

Distribution in Tamaulipas.—Known only from Pano Ayuctle (Hooper, 1953:4).

Taxidea taxus

Badger

The badger in Tamaulipas is poorly known because only a few specimens have been reported from the state. I have examined

only two; one is the skull of a juvenile picked up in the sea along the barrier beach and the other is the skull of an adult male taken in a steel-trap baited with a bird body and rabbit meat. The trap was set in front of a hole in the semidesert area 12 miles south of San Carlos.

On their map 471 Hall and Kelson (1959:927) show a total of five subspecies of *Taxidea taxus.* They include the northern part of Tamaulipas in the geographic range of *T. t. berlandieri.* On page 926 Hall and Kelson (*op. cit.*) list ten additional subspecies described by Shantz. One of them *T. t. littoralis* (Shantz, 1949:301) was based on specimens from southeastern Texas and Matamoros, Tamaulipas. Of the two specimens examined by me the one from the barrier beach is here assigned to *T. l. littoralis* on geographic grounds, and the other one from the vicinity of San Carlos to *T. l. berlandieri.*

Taxidea taxus berlandieri Baird

1858. *Taxidea berlandieri* Baird, Mammals, *in* Repts. Expl. Surv. . . ., 8(1):205, July 14, type from Llano Estacado, Texas, near boundary of New Mexico.

1895. *Taxidea taxus berlandieri*, J. A. Allen, Bull. Amer. Mus. Nat. Hist., 7:256, June 29.

Distribution in Tamaulipas.—Reported from only one locality, in northwestern part of state.

The skull examined, of an adult male, differs from Coahuilan and New Mexican skulls in having a broad rostrum, better developed sagittal and lambdoidal crests, and smaller tympanic bullae. The measurements are greater than those given by Shantz (1949:302) for *T. l. littoralis* and it is for that reason that the skull examined is assigned to *T. l. berlandieri.*

Measurements.—The adult male measured as follows: 710; 115; 110; 55; condylobasal length, 123.1; zygomatic breadth, 81.1; mastoid breadth, 75.5; interorbital constriction, 29.3; least postorbital constriction, 27.6; length of maxillary tooth-row, 42.7; P4, length, 11.9, width, 10.7; M1, length, 11.7, width, 11.7; tympanic bulla, length, 23.3, depth (from basioccipital), 12.8.

Record of occurrence.—One specimen examined from 12 mi. S San Carlos, 1300 ft.

Taxidea taxus littoralis Schantz

1949. *Taxidea taxus littoralis* Schantz, Jour. Mamm., 30:301, August 17, type from Corpus Christi, Nueces Co., Texas.

Distribution in Tamaulipas.—Known only from two localities in northeastern part of state.

Records of occurrence.—One specimen examined from 33 mi. S Washington Beach.

Additional record: Matamoros (Schantz, 1949:302).

Spilogale putorius interrupta (Rafinesque)

Eastern Spotted Skunk

1820. *Mephitis interrupta* Rafinesque, Ann. Nat. . . ., 1:3. Type locality, Upper Missouri River?.

1952. *Spilogale putorious interrupta*, McCarley, Texas Jour. Sci., 4:108. March 30.

Distribution in Tamaulipas.—From Sierra de Tamaulipas northward.

The young male from La Pesca weighed 480 grams. In the Sierra de Tamaulipas a lactating female was taken (June 9) in a steel trap. A young male from there weighed 275 grams. The young male from three miles north of La Pesca weighed 520 grams.

Specimens from Tamaulipas are assigned to the subspecies *interrupta* following Van Gelder (1959:270-279). He regarded specimens from Tamaulipas as intergrades between S. *p. interrupta* and S. *p. leucoparia.*

Records of occurrence.—Specimens examined, 6: 9½ mi. SW Padilla, 1; 8 mi. N La Pesca, 1; La Pesca, 1; Rancho Santa Rosa, 2 km. N, 13 km. W Cd. Victoria, 260 m., 1; Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra, 1200 ft., 2.

Additional records (Van Gelder, 1959:279): "Tamaulipas"; Cd. Victoria.

Mephitis mephitis varians Gray

Striped Skunk

1837. *Mephitis varians* Gray, Charlesworth's Mag. Nat. Hist., 1:581. Type locality, Texas.

1936. *Mephitis mephitis varians*, Hall, Carnegie Inst. Washington, Publ., 473:66, November 20.

Distribution in Tamaulipas.—North half of state.

Measurements.—An adult female from San Fernando measured as follows: 710; 360; 70; 30; basilar length, 56.2; condylobasal length 64.2; zygomatic breadth, 41.3; interorbital constriction, 19.0; length of maxillary tooth-row, 20.7.

Records of occurrence.—One specimen examined from San Fernando, 180 ft.

Additional records: Mier (A. H. Howell, 1901:32); Matamoros (*ibid.*); 2 mi. up stream from Marmolejo (Dice, 1937:250).

Mephitis macroura macroura Lichtenstein

Hooded Skunk

1832. *Mephitis macroura* Lichtenstein, Darstellung neuer oder weing bekannter Säugethiere . . ., pl. 46, type from mountains northwest of the city of México.

1877. *Mephitis edulis* Coues, Berlandier Mss., Fur-bearing Animals: . . ., U. S. Geol. Surv. Territories, Miscl. Publ., 8:236. Type locality, "Inhabits most of Mexico. I have found it around San Fernando de Bexar . . ."

Distribution in Tamaulipas.—West of Sierra Madre Oriental.

The two specimens from Jaumave are young; they were taken on different nights but in the same place. Weights of male and female,

respectively, are 195 and 290 grams. The other three specimens, two young and an adult male, were brought to the collector (Bodley) by natives.

Records of occurrence.—Specimens examined, 5: San Fernando, 180 ft., 2; Jaumave, 2400 ft., 2; Nicolás, 56 km. NW Tula, 5500 ft., 1.

Conepatus mesoleucus mearnsi Merriam

Hog-nosed Skunk

1902. *Conepatus mesoleucus mearnsi* Merriam, Proc. Biol. Soc. Washington, 15:163, August 6, type from Mason, Mason Co., Texas.

Distribution in Tamaulipas.—Probably western part of state, but presently known only from Nicolás.

The specimens herein assigned to this species, represented by the skull only, differ conspicuously from those assigned to *C. leuconotus* only in breadth of M1.

Measurements.—Measurements of a skull (sex undetermined) from Nicolás are as follows: condylobasal length, 77.1; zygomatic breadth, 52.9; postorbital constriction, 21.1; mastoid breadth, 43.7; length of maxillary tooth-row, 23.4; breadth of M1, 7.1.

Records of occurrence.—Two specimens examined from Nicolás, 56 km. NW Tula, 5500 ft.

Conepatus leuconotus texensis Merriam

Eastern Hog-nosed Skunk

1902. *Conepatus leuconotus texensis* Merriam, Proc. Biol. Soc. Washington, 15:162, August 6, type from Brownsville, Cameron Co., Texas.

Distribution in Tamaulipas.—State-wide, except western part.

Three specimens are assigned to this species on the basis of the breadth of M1. In comparison with skulls from the type locality, those of Tamaulipan specimens are slightly smaller and narrower.

Measurements.—Some cranial measurements of a male adult (old) from ten miles west and two miles south of Piedra are: condylobasal length, 79.0; zygomatic breadth, 52.3; postorbital constriction, 22.0; mastoid breadth, 44.2; length of maxillary tooth-row, 24.4; breadth of M1, 9.3.

Records of occurrence.—Specimens examined, 2: La Pesca, 1; Ejido Eslabones, 10 mi. W, 2 mi. S Piedra, 1200 ft., 1.

Additional record: Near El Mulato (Dice, 1937:250).

Felis concolor stanleyana Goldman

Puma

1938. *Felis concolor stanleyana* Goldman, Proc. Biol. Soc. Washington, 51:63, March 18 (renaming of *F. c. youngi* Goldman, Proc. Biol. Soc. Washington, 49:137, August 22, type from Bruni Ranch, near Bruni, Webb Co., Texas).

Distribution in Tamaulipas.—Restricted to mountains of state.

The two specimens examined are skulls only, which were picked up in the field. In general the measurements are like those given

by Goldman (1946:233) for the males of *Felis concolor stanleyana*. But the skull from Miquihuana yielded measurements that suggest intergradation between *F. c. stanleyana* and *F. c. azteca* of the western mountains of Tamaulipas.

Measurements.—Two skulls, one from Miquihuana and the second from 9½ mi. SW Padilla, yield measurements as follows: greatest length, 214.0, 213.0; condylobasal length, 195.0, 190.0; zygomatic breadth, 146.0, 140.1; height of skull (frontals to palate), 70.0, 72.4; interorbital constriction, 41.6, 41.4; breadth of nasals (at posterior union between premaxilla and maxilla), 20.1, 17.9; length of maxillary tooth-row, 62.7, 63.3; crown length of P3, 23.3, ——; breadth of P3, 11.9, 12.2; anteroposterior diameter of upper canine, 15.1, 15.3.

Records of occurrence.—Specimens examined, 2: 9½ mi. SW Padilla, 800 ft., 1; Miquihuana, 6400 ft., 1.

Additional records: Matamoros (Goldman, 1946:234); Zamorina (Hooper, 1953:4).

Felis onca veraecrucis Nelson and Goldman

Jaguar

1933. *Felis onca veraecrucis* Nelson and Goldman, Jour. Mamm., 14:236, August 17, type from San Andrés Tuxtla, Veracruz.

Distribution in Tamaulipas.—Originally all of state; now restricted to sparsely populated areas.

Only one cranium, from the Sierra de Tamaulipas, was examined. It is in good condition but lacks all the teeth except P3 and P4 on the right side. The measurements are larger than those given by Goodwin (1954:15) for a skull from five miles north of Gómez Farías.

Measurements.—The cranium, sex undetermined, from the Sierra de Tamaulipas, affords measurements as follows: greatest length, 238.0; condylobasal length, 204.0; zygomatic breadth, 166.0; breadth of rostrum, 66.1; interorbital constriction, 48.2; mastoid breadth, 100.7; crown length of carnassial, 24.1.

Records of occurrence.—One specimen examined from Sierra de Tamaulipas, 2 mi. S, 10 mi. W Piedra.

Additional records: between Aldama and Soto la Marina (Nelson and Goldman, 1933:237); 5 km. N Gómez Farías (Goodwin, 1954:15).

Felis pardalis albescens Pucheran

Ocelot

1855. *Felis albescens* Pucheran, in I. Geoffroy Saint-Hilaire, Mammiferes, in Petit-Thoaurs, Voyage autor du monde sur . . . *la Venus* . . ., Zoologie, p. 149, type locality, Arkansas.

1906. *Felis pardalis albescens,* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 22: 219, July 25.

Distribution in Tamaulipas.—All of state, except part west of Sierra Madre Oriental.

Hall and Kelson (1959:961) reported from Tamaulipas two subspecies of *Felis pardalis*. According to Goldman (1943:379) the more northern of the two, *F. p. albescens*, is smaller than the more southern one, *F. p. pardalis*. The skull examined, of a young female,

from 10 miles north of Altamira, in southern Tamaulipas, is small, smaller even than skulls of *albescens* from Texas used in comparison. For this reason I here assign the specimen examined to *F. p. albescens* instead of *F. p. pardalis* as did Hall and Kelson (*op. cit.*). Hooper (1953:4) and Dice (1937:251) report as *F. p. pardalis* specimens from 10 miles northeast of Zamorina and others from the Sierra San Carlos. I assume that specimens from these two places should be referred to *albescens* since the specimen from 10 miles north of Altamira, the southernmost locality represented in Tamaulipas, is here referred to *albescens.*

Measurements.—Skull, from 10 mi. N of Altamira, measured as follows: condylobasal length, 97.3; zygomatic breadth, 77.6; squamosal constriction, 50.5; interorbital constriction, 22.2; postorbital constriction, 32.1; length of maxillary tooth-row, 34.7; length of upper carnassial crown (outer side), 13.6.

Records of occurrence.—One specimen examined, from 10 mi. N Altamira.

Additional records: Matamoros (Goldman, 1943:379); Sierra San Carlos (El Mulato and San José) (Dice, 1937:251); Soto la Marina (Goldman, 1943:379); 10 mi. NE Zamorina (Hooper, 1934:4).

Felis wiedii oaxacensis Nelson and Goldman

Margay

1931. *Felis glaucula oaxacensis* Nelson and Goldman, Jour. Mamm., 12: 303, August 24, type from Cerro San Felipe, 10,000 ft., near Oaxaca, Oaxaca.

1943. *Felis wiedii oaxacensis*, Goldman, Jour. Mamm., 24:383, August 17.

Distribution in Tamaulipas.—Probably along Sierra Madre Oriental; known only from Rancho del Cielo (Goodwin, 1954:15).

Felis yaguaroundi cacomitli Berlandier

Yaguaroundi

1895. *Felis cacomitli* Berlandier, *in* Baird, Mammals of the boundary, *in* Emory, Rept. U. S. and Mexican boundary survey 2(2):12, January, type from Matamoros, Tamaulipas.

1905. *Felis yaguaroundi cacomitli,* Elliot, Field Columb. Mus. Publ. 105, Zool. Ser., 6:370, December 6.

1901. *Felis apache* Mearns, Proc. Biol. Soc. Washington, 14:150, August 9, type from Matamoros, Tamaulipas.

Distribution in Tamaulipas.—Eastern and northern parts of Sierra Madre Oriental; known only from type locality and near Gómez Farías (Goodwin, 1954:15).

Lynx rufus texensis J. A. Allen

Bobcat

1895. *Lynx texensis* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 7:188, June 20, based on the description of a bobcat by Audubon and Bachman, The viviparous quadrupeds of North America, 2:293, 1851, from "the vicinity of Castroville, on the headwaters of the Medina [River]," Medina Co., Texas.

1897. *Lynx rufus texensis,* Mearns, Preliminary diagnoses of new mammals . . . from the Mexican boundary line, p. 2, January 12 (preprint of Proc. U. S. Nat. Mus., 20:458, December 24).

Distribution in Tamaulipas.—Probably occurs in western half of state; known only from two localities.

The specimen examined was shot at night at about 3:00 a. m. in the beam of a headlight in typical scrub "monte." The native name for this bobcat in Tamaulipas is "gato rabón."

Measurements.—A male, from Rancho Santa Rosa, measured as follows: 885; 170; 172; 71; condylobasal length, 105.2; interorbital constriction, 22.5; postorbital constriction, 34.6; zygomatic breadth, 83.5; squamosal constriction, 51.7; length of maxillary tooth-row (C-P2), 38.2; length of upper carnassial (outer side), 14.5.

Record of occurrence.—One specimen examined from Rancho Santa Rosa, 360 m.

Additional records: Matamoros (Baird, 1858:96); El Mulato (Dice, 1937: 251).

Trichechus manatus latirostris (Harlan)

Manatee

1823. *Manatus latirostris* Harlan, Jour. Acad. Nat. Sci. Philadelphia, 3(1): 394. Type locality, near the capes of East Florida.

1934. *Trichechus manatus latirostris,* Hatt, Bull. Amer. Mus. Nat. Hist., 66:538, September 10.

Distribution in Tamaulipas.—Reported from mouth of Río Grande (Miller and Kellogg, 1955:791); probably extirpated in state.

Tayassu tajacu angulatus (Cope)

Collared Peccary

1889. *Dicotyles angulatus* Cope, Amer. Nat., 23:147, February, type from Guadalupe River, Texas.

1953. *Tayassu tajacu angulatus,* Dalquest, Louisiana State Univ. Studies, Biol. Sci. Ser., 1:207, December 28.

Distribution in Tamaulipas.—All of state, in suitable habitats.

Records: Near El Mulato (Dice, 1937:256); Alta Cima (Goodwin, 1954: 15); Rancho del Cielo (*ibid.*); approx. 10 mi. N Cues (Leopold, 1947:443 map).

Odocoileus hemionus crooki (Mearns)

Mule Deer

1897. *Dorcelaphus crooki* Mearns, Preliminary diagnoses of new mammals of the genera *Mephitis, Dorcelaphus* and *Dicotyles,* from the Mexican border . . ., p. 2, February 11, type locality summit Dog Mtns., 6129 ft., Hidalgo Co., New Mexico.

1939. *Odocoileus hemionus crooki,* Goldman and Kellogg, Jour. Mamm., 20:507, November 14.

Distribution in Tamaulipas.—Reported only from Cerro del Tigre (Leopold, 1959:504), but probably throughout western part of state. Now rare in the state.

Odocoileus virginianus

White-tailed Deer

This species is relatively abundant in Tamaulipas from where three subspecies have been reported. Two specimens examined were shot at night.

Odocoileus virginianus miquihuanensis Goldman and Kellogg

1940. *Odocoileus virginianus miquihuanensis* Goldman and Kellogg, Proc. Biol. Soc. Washington, 53:84, June 28, type from Sierra Madre Oriental, 6000 ft., near Miquihuana, Tamaulipas.

Distribution in Tamaulipas.—Throughout Sierra Madre Oriental.

An adult male, having two points on each antler, and a young male were examined and identified as this subspecies because of their small size and dark color.

Measurements.—A male from 15 km. W Rancho Santa Rosa affords measurements as follows: 1385; 245; 330; 154; condylobasal length, 234; length of maxillary tooth-row, 76.3; width across orbits at frontal-jugal suture, 100.9.

Records of occurrence—Specimens examined, 2: 15 km. W Rancho Santa Rosa, 4500 ft., 1; Ejido Santa Isabel, 2000 ft., 1.

Additional records (Goodwin, 1954:15): San Antonio, 11 km. SW Joya de Salas; Rancho Pano Ayuctle.

Odocoileus virginianus texanus (Mearns)

1898. *Dorcelaphus texanus* Mearns, Proc. Biol. Soc. Washington, 12:23, January 27, type from Fort Clark [north of Eagle Pass on Big Bend of Rio Grande], Kinney Co., Texas.

1902. *Dama v[irginiana]. texensis [sic],* J. A. Allen, Bull. Amer. Mus. Nat. Hist., 16:20, February 1.

1901. *Odocoileus texensis* Miller and Rehn, Proc. Boston Soc. Nat. Hist., 30:17, December 27, an accidental renaming of *texanus.*

Distribution in Tamaulipas.—Probably all of northern part of state.

Two fragments of lower jaw from the barrier beach were examined and assigned to this subspecies on geographic grounds.

Records of occurrence.—Specimens examined, 2, fragments from 33 mi. S Washington Beach.

Additional records: Sierra San Carlos (El Mulato and Sardinia) (Dice, 1937:256).

Odocoileus virginianus veraecrucis Goldman and Kellogg

1940. *Odocoileus virginianus veraecrucis* Goldman and Kellogg, Proc. Biol. Soc. Washington, 53:89, June 28, type from Chijol, 200 ft., Veracruz.

Distribution in Tamaulipas.—Tropical area, reported only from Soto la Marina (Miller and Kellogg, 1955:806) and Savinito Tierre [= Tierra] Caliente (J. A. Allen, 1881:184) and Tampico (*ibid.*) as *Cariacus virginianus mexicanus.*

Mazama americana temama (Kerr)

Red Brocket

1782. *Cervus temama* Kerr, The Animal kingdom . . ., p. 303. Type locality, restricted to Mirador, Veracruz, by Hershkovitz (Fieldiana-Zool., Chicago Nat. Hist. Mus., 31:567, July 10, 1951).

1951. *Mazama americana temama,* Hershkovitz. Fieldiana-Zool., Chicago Nat. Hist. Mus., 31:567, July 10.

Distribution in Tamaulipas.—Southern part of state in tropical area.

The specimen examined is conspicuously darker than specimens from Veracruz and Chiapas, being especially more brownish and less reddish.

Records of occurrence.—One specimen examined from Rancho Pano Ayuctle (skin only).

Additional records: Alta Cima (Goodwin, 1954:15); Rancho del Cielo (Hooper, 1953:10).

Antilocapra americana mexicana Merriam

Pronghorn

1901. *Antilocapra americana mexicana* Merriam, Proc. Biol. Soc. Washington, 14:31, April 5, type from Sierra en Media, Chihuahua.

Distribution in Tamaulipas.—Originally in the northern part of state; now absent from Tamaulipas.

Antilocapra is here included on the basis of a skull recorded by Baird (1858:669) from Matamoros. J. A. Allen (1881:184) doubted the occurrence of this animal in Tamaulipas because Dr. Palmer found no indications of the presence of *Antilocapra* in any portion of the area that he traversed, which apparently was only southern Tamaulipas.

I am sure that the pronghorn is extinct in Tamaulipas, but its occurrence in the northern part of the state in relatively recent time (more than 100 years ago) seems possible because the habitat in northern Tamaulipas is suitable for the pronghorn.

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